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### GENERAL NEWS SECTION.....

\*Illustrated.

The superintendent, trainmaster, or yardmaster in charge of the operation of a terminal yard performs a double duty. His

#### The Contest on the Operation of Terminal Yards

first responsibility is to secure the efficient and economical operation of his yard. Hardly secondary in importance is the providing of proper service for the various industries and team tracks. He must not only operate the yard economically for the company, but he must also give the patrons the proper service, for the influence of the yard crew in securing and holding traffic is not

always realized by railway men. These are but two of the numerous phases of terminal operation whose consideration is included in the contest on "The Operation of Terminal Yards," which we are now conducting. In order that this discussion may be of the greatest practical value to those engaged in this phase of railway operation, we urge all who are now, or who have been, in charge of the operation of terminal yards, to prepare discussions on this subject. Several excellent papers already have been received. We will pay \$50 and \$35 for the two best papers received, and our regular space rates for all other papers accepted and published. The awards will be based on the practicability of the methods suggested and the completeness with which the subject is covered. All contributions should be sent to the editor of the *Railway Age Gazette*, 608 South Dearborn street, Chicago, and must be received not later than September 15, to be considered by the judges.

The American Association of Railroad Superintendents, whose meeting is reported in this issue, shows an encouraging increase

#### Superintendents

##### Getting

##### Together

in members and has received a lot of expressions of friendly interest from general managers; but still the association as a whole has not yet found its gait. A gathering like that of last week is profitable to every member who participates in it with serious purpose, and even the informal conferences, outside the meeting room, afford, for many members, a sufficient recompense for the time spent; but to give the association the dignity it deserves, and to avoid letting it fall into the class of mere social gatherings, like the Old Time Telegraphers', a lot of members have got to do some vigorous work in committees. The committee men now in office have done much good work, but evidently they have not felt warranted in giving to their tasks the time necessary to formulate conclusions of the kind which will make an impression on the American Railway Association. The need of an association of superintendents is very definite. The only body which deals with their problems is the American Railway Association, which does very little discussing in open meeting—and even that discussing is not made public until several months afterward. The really important discussions all take place in committee rooms; and that, for many subjects, is not the most profitable way. It is to be hoped that those 41 general managers who have given the superintendents a few pleasant words, will follow up their letters with a substantial "boost." Messrs. Taylor and Underwood have made a good beginning.

People sometimes say that no man is indispensable. And it is true enough that after the deaths even of men who have

#### The Death

##### of

#### Darius Miller

played the largest parts in political and business affairs the world seems to go on much as before. But every once in a while some strong man who is in his very prime and appears to have years of usefulness before him is suddenly stricken down, and then there is a feeling that while he was not exactly indispensable, nevertheless the world has suffered a heavy loss because he was not allowed to live out what, it seems, should have been his allotted years of achievement. The death of Darius Miller is one which causes feelings and reflections of this kind. Urbane, tactful, optimistic, sagacious, an indefatigable worker, an able administrator, at the head of one of the greatest railroad systems in the world where he had an almost unsurpassed opportunity to do creative work for the owners of the property and for the public, it seems sad beyond expression that he should have been cut off at only 55 years old when he was in the very middle period of his prime. Doubtless in the world's hard economy no one is exactly indispensable. But when such men as Darius Miller

go they are long and greatly missed in important places. A certain man, on being introduced to James J. Hill, remarked that he knew Mr. Miller. "Then you know a very great railroad man," Mr. Hill immediately responded. Mr. Hill properly appraised Mr. Miller's remarkable qualities somewhat earlier than others, but every man competent to have an opinion would now accept Mr. Hill's judgment. Mr. Miller was more than a great railroad man. He was a great citizen. He was a great citizen both because of his civic activities and because every man who does creative work in industry or commerce such as he did is a great citizen of his own country and of the world. How unfortunate it is that so many able men devote their lives to promoting the welfare of their country by building up its commerce and industries as Darius Miller did, and receive very little credit or thanks for it from the public, while this same foolish public is bestowing lavish credit and thanks on men whose only public service consists in frequently standing up in their places and talking for two hours without stopping to think. While Mr. Miller will be long remembered as a great railroad man, he will be even longer remembered by those who frequently came in contact with him as one of the truest, finest and most lovable gentlemen that ever lived. Without ostentation or condescension he was the soul of kindness, consideration and politeness to every one, high or low, and whether in business or in social life. The railroad world and the business world of America have suffered a heavy loss.

#### A FRANK EXPRESSION OF PUBLIC SENTIMENT

THE indifference of the public to the perplexities which policemen, constables and magistrates encounter in dealing with the tramp problem is well known. The average citizen takes so little thought about the possibility of inconvenience or danger to himself by reason of the railroad tramp, and what it might mean, that his representative in the legislature usually takes no thought at all. Public sentiment is so little likely to produce any form of action that the narrow or indolent legislator can safely devote his time and energies to some pleasanter form of activity. But indifference does now and then give way to something positive. There is a reason why there is such general acquiescence in the policy of silence and neglect. The "pocket nerve" is affected. This nerve is always affected when it comes to breaking up a widespread abuse.

Every thoughtful and public spirited citizen should be interested in the following very frank reportorial expression in the *Utica* (N. Y.) Press:

ROME, August 16.—Railroad detectives on Saturday arrested 17 tramps, whom they took off trains in Verona and took them to Higginsville before Justice of the Peace Smith E. Schwody, who sentenced them all to 15 days each in the county jail in this city. It will cost the county about \$300. The people of Verona should remember this justice when he comes up for office again.

There are now 58 prisoners in the Rome jail. Railroad detectives must stand in with the Prison Commission, who demanded a larger jail for the county. What good does this do? As soon as these tramps are released they will jump the first train out of the city and no one will be benefited. Had they been left alone they would have gone out of the county and no expense would have been imposed on the county of Oneida.

Here is very definite evidence of public sentiment in favor of lawlessness because it costs too much money to enforce the laws. Such sentiment is very common, though it is not often so plainly expressed. Railroad officers have made some little effort to stiffen magistrates' backbones, here and there, but it is evident that such missionary work must continue to encounter the deadening influence of this local short-sightedness.

It is plainly evident that the way to deal with the tramp problem on railroads, whether in the state of New York or in any state, is to consider it as one state-wide problem. The towns and cities are always jealous of each other and usually are actuated by the narrowest views.

The right of local self government is a vital feature of our

republican constitution; but it is subject to regulation and limitation by the sovereign state; and there does not seem to be any way in which this regulation can be applied to the tramp problem except through the means of a radical legislative act. Local police departments and local magistrates need to be freed from every influence tending to weaken their respect for a rigid law. The law for repression of tramps should bear with strong and equal force in every part of the state, every day in the year. There seems to be no hope of this except through direct state administration.

#### SAVINGS UNDER GOVERNMENT OWNERSHIP

WE publish on another page a letter written recently by Sir George Paish, editor of the *London Statist*, to E. P. Ripley, containing an estimate of the saving in the annual cost of railway capital which could be made in this country under government ownership. In view of several estimates relating to the same subject matter which recently have been made in this country, that of Sir George is highly interesting, for he is one of the leading authorities on financial subjects in the world. For years his paper has specialized on American railway affairs, and its American railroad sections, which have been regularly republished in book form, have been mines of authoritative information regarding the operating and financial results of our roads. Being an Englishman, Sir George can participate in discussions of our railway questions without heat, prejudice or partisanship.

One of the most notorious estimates of the saving which under government ownership could be made in the cost of railway capital was that presented by Clifford Thorne to different organizations and persons, and which varied from \$411,000,000 to \$464,000,000, according to the size of the mistakes which Thorne made in his figures. In an address last February C. A. Prouty, director of valuation of the Interstate Commerce Commission, roughly estimated that the railways would cost the government \$20,000,000,000; that the interest rate that would have to be paid on this debt would be 3 per cent; that, therefore, the total interest of the government would be \$600,000,000 per annum, which would be some \$72,000,000 less than the interest and dividends paid by the railways. In his recent book on *Government Ownership of Railways*, Samuel O. Dunn, after making estimates of the total amount that the government would have to pay for the railways, and the rate of interest it would have to pay on the railway debt, concluded that the government's maximum possible saving in cost of capital would be \$120,000,000 a year. He believed, however, that the saving was likely to be substantially less than this, if, indeed, there were any at all.

Arriving at his conclusion by a different method, Sir George Paish places the maximum possible saving at \$130,000,000 a year. Of this, \$70,000,000 would be saved by refunding the funded debt of the railways in 3½ per cent government bonds, provided this refunding were possible. Sir George doubts, however, whether it would be possible for years, simply because he doubts if those who hold the bonds would be willing to exchange them for government 3½ per cent bonds.

"Thus," he concludes, "one cannot safely calculate a greater immediate profit from government ownership than about \$60,000,000 per annum." and, of course, if there were any considerable increase in operating expenses under government ownership this saving would speedily be more than wiped out. As a matter of fact, the greatest possible savings that could be made under government ownership in the cost of railway capital are so much smaller than the smallest increases that it can be naturally assumed would occur in the cost of operation, that it may be regarded as certain that the adoption of government ownership, instead of yielding profits to the government, would speedily involve it in heavy losses.



### THE INTERSTATE COMMERCE COMMISSION AND PASSENGER FARES

THAT the Interstate Commerce Commission meant business, and was not merely holding forth an empty hope when it suggested, in the eastern rate advance decision, the possibility of increasing passenger fares, is demonstrated by its decision of last week denying the petition of the state commissions of Arkansas, Missouri and Oklahoma for a reduction of the interstate fares in those states from three cents to two cents a mile, the rate forced by those states for intrastate travel.

That there is no immediate danger that the function of the Interstate Commerce Commission is to be limited to computing the sums of intrastate rates made by state legislatures or commissions, and prescribing the result as a measure of the interstate rates, has been thoroughly demonstrated by several recent decisions of the Supreme Court, notably that in the Shreveport case. As to what the commission would consider a reasonable passenger fare, however, it has never given any very definite clew until this opinion. The commission not only holds that state-made fares are not to be taken as criteria of the reasonableness of interstate fares, but expresses the conclusion that "from all the evidence, to base interstate passenger fares from and to and through Arkansas, Missouri and Oklahoma on three cents a mile does not result in rates that we are convinced are unreasonable."

It is interesting to note, moreover, that the commission was not influenced by the claim commonly made by the state commissioners that the growth of traffic proves that it has been stimulated by the two-cent fare. The commission says: "There are so many conditions determining the extent of passenger travel that accurate conclusions cannot be reached from the consideration of any one condition alone. . . . Population is increasing in the states here represented, and greater density of population means more travel. . . . The comparisons of revenues intrastate between the two-cent and three-cent periods prove nothing in favor of the lower fare. . . . This does not mean that there may not be force in the theory that a reduction of a rate tends to increase the traffic or travel."

The lawfulness of the two-cent fares not being in issue, the commission expressed no conclusion as to their reasonableness for intrastate travel, but it does make this highly significant suggestion: "It may be that a mileage scale of passenger rates applicable to both state and interstate business somewhat less than three cents per mile would be reasonable in this territory and would, if adopted, remove the alleged discrimination now complained of. Without expressing an opinion as to this we deem it not improper to suggest its consideration by complainants and defendants as a possible basis of a fair adjustment of the controversy."

The suggested compromise could be brought about by the simple and time-honored expedient of splitting the difference, as the interstate rates are now based on three cents and the state rates on two cents in the territory under consideration. In other parts of the country an adjustment on this basis would require the states to give up something they have gained in state rates in return for concessions which the carriers have already made as to interstate rates and in some of these other sections the roads are already working out plans for advancing all interstate rates to a minimum of 2½ cents a mile. It is understood that it is also proposed to follow the suggestion made by the Interstate Commerce Commission and ask the various states that have enforced reductions to two cents to allow an advance.

There is no reason for making state rates lower than interstate rates; on the contrary, every principle of rate-making demands that rates for short distances be on a higher basis than rates for long distances. The railways now have an excellent opportunity to advance interstate fares to a reasonable basis. If they then fail to convince the states that the

two-cent fares are too low, the Shreveport decision points the remedy. It is no longer the case that discrimination in rates can be corrected only by reducing the higher rate. If the commission holds that \$3 is a reasonable fare for an interstate journey of 100 miles, there should, it would seem, be little difficulty in proving that the passenger who pays that rate is discriminated against in favor of the man who rides 150 miles for the same fare within the limits of a single state.

Interstate fares in Western Passenger Association territory were generally reduced to about two cents a mile on May 1 under the aggregate fare clause of the fourth section of the commerce act. At the same time the Central Passenger Association roads refrained from reducing their rates by refusing to recognize state rates in filing their interstate basing fares with the Interstate Commerce Commission. As the aggregate fare clause requires only that the fare for a through route shall not exceed the aggregate of the intermediate interstate rates it was only necessary for the eastern roads to maintain their interstate basing fares at 2½ cents a mile to avoid reducing through fares. It is understood they are now planning to advance all interstate fares to that basis.

### CANADIAN PACIFIC

IN the last few days of trading before the New York Stock Exchange closed Canadian Pacific stock was conspicuous for its rapid declines in price, even in a market that was almost unprecedented in the rapidity with which prices in general fell. The desire of foreign holders of Canadian Pacific securities to convert their holdings into cash was ample explanation for the drop in the quoted prices of the stock; but the question that arose in a good many people's mind was as to whether the reaction from the boom of recent years in Canada had not adversely affected the Canadian Pacific to such an extent as to account in some part for the greater pressure on this stock than on that of most United States roads. The annual report of the Canadian Pacific for 1914 does not justify any such conclusion, although it indicates that the Canadian Pacific, like other Canadian industries, has felt the reaction which has taken place in Canada.

In the fiscal year ended June 30, 1914, the company earned \$81,135,000 from freight, as compared with \$89,655,000 in the previous year, and \$32,478,000 from passengers, as compared with \$35,545,000 in the previous year. On the other hand, revenue from sleeping cars, express, telegraph and miscellaneous increased from \$13,274,000 in 1913 to \$15,069,000 in 1914, so that the total decrease in earnings was \$9,580,000, or between 7 and 8 per cent. This is by no means a startling falling off in gross earnings, especially when it is remembered that the earnings in 1913 were the largest in the history of the company.

Even more important, however, is the fact that the company was able to reduce its transportation expenses in proportion to its loss in gross revenue. Total operating expenses in 1914 amounted to \$87,389,000, and in 1913 to \$93,150,000. Included in these totals are \$42,250,000 in 1914 for transportation expenses and \$46,074,000 in 1913. This is a reduction of nearly \$4,000,000, or more than 9 per cent. Without detailed expense accounts it is impossible to tell how much of this reduction is in labor. Undoubtedly Canada was paying too highly for its labor in the few years preceding 1913 and it may well be that a considerable portion of the saving in transportation expenses in 1914 was made in the wages paid to employees in this department. Probably the greater part, however, was because of increased trainload.

Appropriations for both maintenance of way and of equipment were reduced with the falling off in business; but were not heavily cut. In 1914 \$16,427,000 was spent for maintenance of way, as against \$18,499,000 in 1913, and \$16,617,000 for maintenance of equipment, as against \$17,199,000 in 1913. The reduction in maintenance of way looks heavier than it really is, due to the fact that in 1913, 1912 and for some years previous the Canadian Pacific had been paying too high for its section labor because of the competition for this class of labor, due to the construction work

on the Pacific coast extension of the St. Paul and the extensive building by both the Grand Trunk Pacific and the Canadian Northern. Apparently, therefore, the earning power of the Canadian Pacific, so far from being impaired by the depression in Canada, has suffered less than a great many of United States roads, especially the transcontinentals, in recent years.

In 1914 the Canadian Pacific hauled 27,801,000 tons of freight, as compared with 29,472,000 in 1913, and 25,940,000 in 1912. The average earnings per ton per mile was 7.5 mills in 1914, as against 7.7 mills in each of the other two years, the average length of haul remaining about the same in the two years, so that the ton mileage of revenue freight was less by 5.70 per cent in 1914 than in 1913. The Canadian Pacific in 1913 carried a larger proportion of non-revenue freight than most roads in this country the total ton mileage of non-revenue freight in 1913 being 1,744,000,000. In 1914 the ton mileage of this non-revenue freight was but 1,497,000,000, a decrease of 14 per cent, reflecting, probably, the slackening in branch line building by the company.

Despite the falling off in ton mileage there was a quite notable increase in the average revenue trainload, which in 1914 was 407 tons, as compared with 381 tons in 1913. The total trainload, including non-revenue freight, was 464 tons in 1914 and 440 tons in 1913. This is an increase of 5.48 per cent, and is in part the result of an increase in carloading per loaded car of 2.91 per cent.

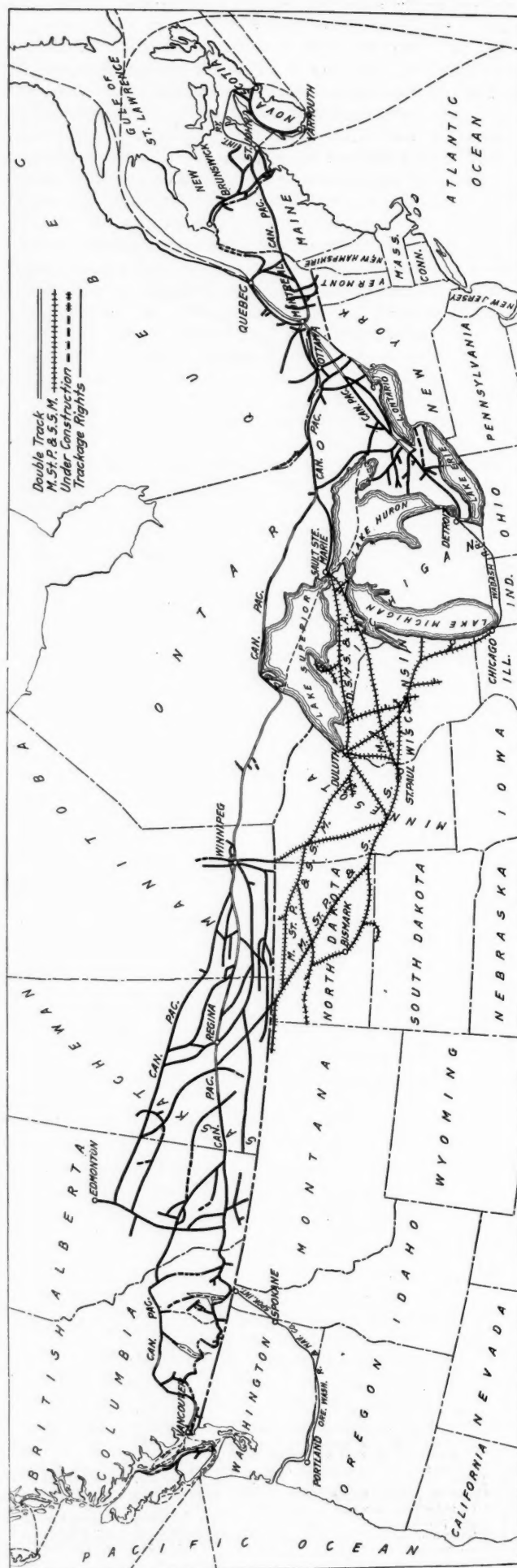
The Canadian Pacific shows only the total tonnage of commodities carried, and in showing the principal commodities separately the annual report shows flour by barrels, grain by bushels, live-stock by head, etc. Making a rough approximation, however, the following table shows the tonnage in 1914, compared with 1913, of the principal commodities.

	Tons carried	
	1914	1913
Flour .....	862,000	793,000
Grain .....	5,548,000	5,159,000
Livestock .....	1,000,000	800,000
Lumber .....	4,532,000	4,000,000
Manufactured articles .....	8,148,000	9,519,000
All other articles .....	9,159,000	9,625,000

Earning power is only one of the factors in the price at which Canadian Pacific stock has sold in recent years. The assets of the company, in addition to its railroad property, are enormous. Among these assets, of course, is the company's credit and ability to raise new money cheaply. Undoubtedly the European war as well as the Canadian depression has affected this credit; but on the other hand the Canadian Pacific is in no immediate need, apparently, of new capital and a period of cessation from new construction would give the company, probably, a more efficient and well-knit together plant than would a continuation of an extensive program of branch line building.

In the last annual report for the first time the company separates its property investment as between railway and rolling stock. The total for these two items in 1913 was placed at \$452,321,000. In 1914 the railway was carried on the books at \$338,084,000, and rolling stock at \$153,256,000. In addition, the company owns ocean, lake and river steamships costing \$24,171,000, and also owns securities, the cost of which was \$107,868,000 and the par value of which is \$162,606,000. Previous to 1914 the company did not show on its balance sheet, except in a foot note, the land in Manitoba, Saskatchewan, Alberta and British Columbia. These lands are now taken on to the balance sheet as inactive assets, which, together with certain power and mining company stocks (carried at \$4,797,000) are carried at a total value of \$133,022,000. Apparently the book value of these lands is a very conservative estimate of their sales value. For instance, Alberta agricultural lands are carried at \$13 an acre on the books, whereas an average of \$17.80 per acre was received for agricultural lands sold in 1914 and, exclusive of irrigated lands, \$16.57. The irrigated land sold during the year brought \$66.93, while the irrigated land in the eastern section of Alberta is carried on the books at but \$40 an acre.

The outstanding securities of the company were increased during the year by the sale of approximately \$4,000,000 4 per cent preference stock and \$10,000,000 4 per cent consolidated debenture



The Canadian Pacific and its Subsidiary, the Soo



stock, and by the sale of \$52,000,000 6 per cent notes, which are secured by the deferred payments on land and town sites totaling \$42,667,000; government securities amounting to \$10,089,000, and a deposit with the trustee totaling \$3,790,000. The note sale was made to stockholders at 80 and amounted, of course, to a considerable extra dividend. President Shaughnessy says that the money provided from this sale of notes is all that will be required for the purposes of the company. Cash on hand at the end of the year totaled \$36,778,000. Stockholders, however, are to be asked to authorize an increase of \$75,000,000 in the ordinary stock, although there is no intention of issuing any of this stock until conditions materially improve in Canada and increased business warrants extensions or additions and betterments.

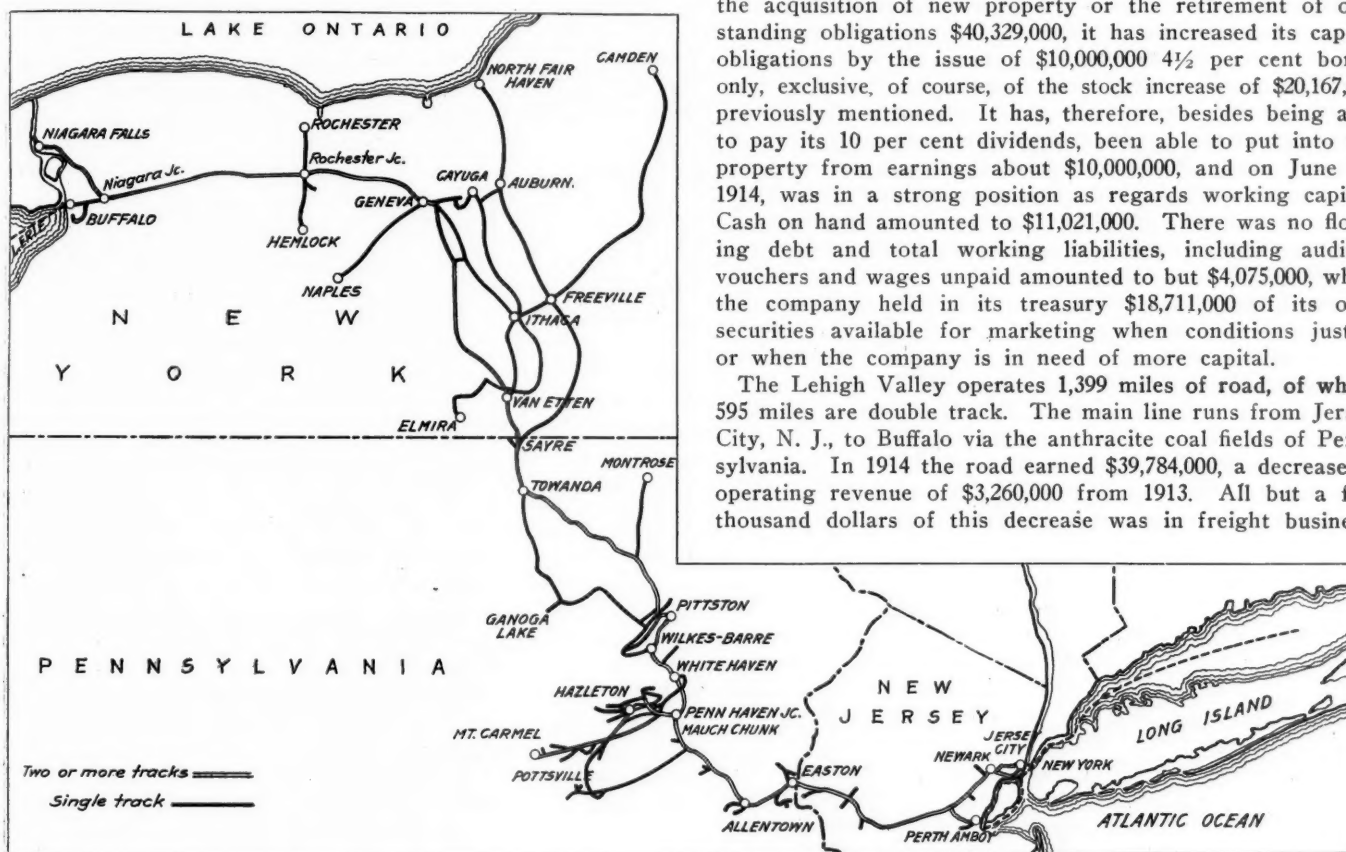
During the years 1910 to 1913 the company spent \$60,000,000 for cars and locomotives, and during 1914 the deliveries amounted to about \$14,000,000. The payment for these deliveries is to be made in 15 annual installments through a separate corporation—the Victoria Rolling Stock & Realty Company; but the entire

### LEHIGH VALLEY

IN 1911 and the early part of 1912, after the Lehigh Valley had in 1910 increased its outstanding capital stock by the sale of \$20,000,000 par value of stock to its own shareholders and raised its dividend to 10 per cent, there were expressions of opinion made quite freely, especially in New York, that the company had overestimated its earning capacity and would fail to justify the optimism of its directors. The year 1912 was not a prosperous one for the company, but even then it succeeded in earning its dividend; 1913 was a very prosperous year, and in 1914, although the company felt the general business depression and especially the falling off in anthracite coal traffic, it earned its 10 per cent dividend, even without the extraordinary \$685,000 received as other income from dividends on the stock of the Temple Iron Company.

Furthermore, while the company has spent during the four years since July 1, 1910, for the betterment of the property, the acquisition of new property or the retirement of outstanding obligations \$40,329,000, it has increased its capital obligations by the issue of \$10,000,000 4½ per cent bonds only, exclusive, of course, of the stock increase of \$20,167,000 previously mentioned. It has, therefore, besides being able to pay its 10 per cent dividends, been able to put into the property from earnings about \$10,000,000, and on June 30, 1914, was in a strong position as regards working capital. Cash on hand amounted to \$11,021,000. There was no floating debt and total working liabilities, including audited vouchers and wages unpaid amounted to but \$4,075,000, while the company held in its treasury \$18,711,000 of its own securities available for marketing when conditions justify or when the company is in need of more capital.

The Lehigh Valley operates 1,399 miles of road, of which 595 miles are double track. The main line runs from Jersey City, N. J., to Buffalo via the anthracite coal fields of Pennsylvania. In 1914 the road earned \$39,784,000, a decrease in operating revenue of \$3,260,000 from 1913. All but a few thousand dollars of this decrease was in freight business.



The Lehigh Valley

cost has been advanced by the Canadian Pacific pending the sale of rolling stock equipment bonds.

The following table shows the principal figures for operation in 1914 compared with 1913:

	1914	1913
Mileage operated .....	12,044	11,602
Freight revenue .....	\$81,135,295	\$89,655,223
Passenger revenue .....	32,478,147	35,545,062
Sleeping car, express, telegraph and miscellaneous .....	15,068,667	13,273,732
Total .....	129,814,824	139,395,700
Maint. of way and structures .....	16,426,582	18,498,741
Maint. of equipment .....	16,617,247	17,198,573
Traffic expenses .....	3,626,612	3,376,981
Transportation expenses .....	42,250,286	46,074,299
General expenses .....	4,322,104	3,953,770
Parlor and sleeping car expenses .....	1,348,979	1,241,700
Commercial telegraph .....	1,613,688	1,691,953
Expenses of lake and river steamers .....	1,183,397	1,113,808
Total .....	87,388,896	93,149,826
Gross corporate income .....	42,425,928	47,491,437
Net corporate income .....	32,198,617	36,615,085
Appropriations .....	125,000	1,125,000
Dividends .....	27,709,520	24,379,827
Surplus .....	4,364,097	11,110,258

The total ton mileage in 1914 of all revenue freight was 5,219,000,000, a decrease from 1913 of 10.21 per cent. The average length of haul was 174 miles in 1914, or about 3 per cent less than in 1913. Of the total 29,924,000 tons carried in 1914, 13,565,000 tons were furnished by anthracite coal. This was a decrease of 1,168,000 tons in the anthracite coal tonnage as compared with 1913. The other commodities in which there was a considerable decrease in tonnage were bituminous coal, cement, brick and lime, iron and steel rails and grain.

With the falling off in coal and other heavily loading commodities it was to be expected that there would be a smaller average train load. The revenue train load in 1914 was 595 tons, and in 1913 599 tons, a decrease of less than 1 per cent, and due in part to a larger proportion of empty car mileage and in part to a smaller loading per loaded car. The Lehigh Valley figures two empty cars equal to one loaded car in estimating the average cars per "draft," and

on this basis there were 30.9 loaded cars per draft on the average in 1914 and 30.5 in 1913. This presumably accounts for a very slightly higher percentage of freight helping locomotive mileage in 1914 than in 1913, the figures being 9.52 in 1914 and 8.65 in 1913. On the other hand, the percentage of passenger helping locomotive mileage was but 2.59 as against 2.88 the year before, and the mileage of light locomotives was reduced from 1,820,000 in 1913 to 1,585,000 in 1914, and the switching mileage from 5,517,000 in 1913 to 5,364,000 in 1914.

Total operating expenses of the Lehigh Valley amounted to \$27,609,000 in 1914, a decrease of \$1,499,000. All of this decrease was in maintenance, maintenance of way and structures costing \$5,694,000 in 1913 and \$4,575,000 in 1914, a reduction of \$1,119,000; and maintenance of equipment, \$7,561,000 in 1913 and \$7,012,000 in 1914, a reduction of \$549,000. The heaviest cut in maintenance was made in the appropriation for rails, \$729,000 being spent on this account in 1913 and \$310,000 in 1914. With the smaller rail renewal it was, of course, possible to make a saving in roadway and track labor, which includes the labor of placing rails in track. There was also a considerable reduction in the amounts spent for bridges, trestles and culverts. Most of the saving made in maintenance of equipment expenses was through smaller amounts charged for renewals of locomotives and renewals of passenger train cars—which means the charges against operating expenses for equipment sold or scrapped—and a somewhat smaller expenditure for repairs of freight train cars. Larger amounts were charged for depreciation of both locomotives and freight cars.

The full-crew law was probably in part responsible for the company's inability to reduce transportation expenses with a reduction of traffic handled.

It is interesting to note that in 1914 the company had on an average 22,017 employees in its service as against 22,800 in 1913, and the total payments to labor in 1914 amounted to \$17,120,152 and in 1913 to \$17,639,628.

The following table shows the principal figures for operation in 1914 as compared with 1913:

	1914	1913
Mileage operated .....	1,444	1,439
Coal freight revenue.....	\$18,492,683	\$20,385,389
Merchandise freight revenue.....	15,026,684	16,339,749
Passenger revenue .....	4,795,147	4,867,554
Total operating revenue.....	39,783,564	43,043,372
Maint. of way and structures.....	4,575,062	5,694,422
Maint. of equipment .....	7,011,946	7,561,271
Traffic expenses .....	1,002,872	982,858
Transportation expenses .....	14,071,183	13,993,617
General expenses .....	948,099	875,651
Total operating expenses.....	27,609,162	29,107,820
Taxes .....	1,549,895	1,447,205
Operating income .....	10,344,263	12,208,137
Gross corporate income.....	13,208,535	14,511,892
Net corporate income.....	7,056,660	8,761,828
Dividends .....	6,060,800	6,060,800
Surplus .....	995,860	2,701,028

## NEW BOOKS

*Theory of Arches and Suspension Bridges.* By J. Melan, professor of bridge design, at the German Technical School at Prague. Translation from the German made by D. B. Steinman, professor of civil engineering, University of Idaho. Size 6 in. by 9 in., 303 pages, 119 illustrations, 3 plates, 9 tables, cloth binding. Published by Myron C. Clark Company, Chicago. Price \$3.

Professor Melan's treatise on the "Theory of Arches and Suspension Bridges" has gone through three editions in Europe and has already found some application among bridge engineers in this country. Believing that no work of the same scope could be found in any language, the translator undertook to prepare the present English version in order to widen its sphere of usefulness and render it accessible to the profession in this country. The translation is made from the third edition and reproduces that book without omission. In some cases the examples and tables have been converted from metric to English units and characters and abbreviations have been changed to conform to our standard symbols. An appendix covering masonry and concrete arches and a bibliography of literature on arches and suspension bridges are included.

## Letters to the Editor

### ROADMASTERS' AND MAINTENANCE OF WAY ASS'N

HILLBURN, N. Y., August 24, 1914.

TO THE EDITOR OF THE RAILWAY AGE GAZETTE:

May I call the attention of the readers of the *Railway Age Gazette* to the following letter which was recently sent by H. R. Safford, chief engineer of the Grand Trunk, to T. F. Donahue, general supervisor of road of the Baltimore & Ohio and president of the Roadmasters' and Maintenance of Way Association:

"I notice by the press that the annual meeting of the Roadmasters' and Maintenance of Way Association will be held at Chicago on September 8. I have notified all of our officers who are members of your association, not only giving them permission but encouraging them to attend the meeting, and have also arranged to have a number of our supervisors attend the meeting in the hope that they will become connected with your body, as I feel that the work which your association is doing is not only beneficial to the men individually who belong to it but the company whom they serve."

W. C. KIDD,

Secretary Track Supply Association.

### WHERE THE COMMERCE COMMISSION MIGHT HELP

NEW YORK, August 19, 1914.

TO THE EDITOR OF THE RAILWAY AGE GAZETTE:

Referring to the letter in your issue of July 31 regarding a possible retrenchment in the legal expenses of the railway companies, I write to say that the letter rather understates the case—not that this is a bad fault, but that it may fail to attract the attention it deserves. The Commerce Commission might well address itself to several aspects of the case, because certain phases would be difficult for railroads to handle.

For instance, your correspondent mentions the fact that an insolvent railroad is saddled with receivers and lawyers for receivers, lawyers for the creditors and lawyers for the stockholders. As often as not the receiver is a lawyer, not a trained railroad operator, which is illogical and expensive, even when nothing worse can be said. As a matter of fact the courts have in many instances appointed as receivers lawyers who were either favorites of the court or nominees of the incompetent management which brought about the receivership—in so many instances that it would seem to be a rule rather than an exception. It is hard to understand why the management of an insolvent corporation should have the appointment of its own nominee as receiver. Our general bankruptcy law has advanced beyond this stage. Is it not time for our railroad and general corporation law to advance?

And why should the court appoint lawyers as receivers? The first thing the lawyer-receiver does is to retain another lawyer as counsel. Then he has to overwork the general manager in order to supply the practical information that the receiver himself lacks. Should the corpus of the estate be burdened for such inefficient service? This is perhaps a difficult point to drive home without mentioning specific instances, and these can only be mentioned at the risk of contempt of court. Perhaps the attention of some member of congress could be drawn to the fact and he could be furnished with enough definite instances to prove the case.

A possible retrenchment which your correspondent does not mention is in the department of rolling stock. Most railroad companies in ordering new equipment specify a number of details in their locomotives and cars which differ from the specifications of other lines. Each of these details adds to the cost of equipment out of all proportion to the value of the item, and in addition the railroad pays the salary of one or more experts who have invented the necessity for the detail. If the railroads would buy standard equipment they would save both the extra outlay for fancy specifications and the salaries of the men who devise them.

ROOTER.



# The Present Status of Clearance Legislation

## A Discussion of the Necessity for Such Action, with a Review of the Laws Passed and Orders Already Issued

The subject of side and vertical clearances has received much attention from railway operating and engineering officers during the past decade. Increased attention has been given to it recently because of legislation enacted or threatened in several states and in Congress during the past three or four years. Thirteen bills were introduced in nine different state legislatures last year relating to this subject, three of which became laws, while a bill of this same nature has also been introduced before the legislature of Georgia. In addition, the Railroad Commissioners of Ohio and California issued definite orders last year, and several other commissions have the question under consideration. This is therefore a question of much importance to railway men.

### OBJECT OF CLEARANCE LEGISLATION

As the purpose of any legislation establishing minimum side and vertical clearances is ostensibly to remove dangerous conditions, and thereby decrease the risk of accident, the necessity for such action can best be determined by an examination of the accident reports of the Interstate Commerce Commission. These reports show that during the fiscal year ending June 30, 1913, a total of 10,550 persons were killed and 86,688 injured in accidents on steam roads. Of these, 5,558 killed, and 6,310 injured, were trespassers and 2,939 killed and 56,619 injured were employees on duty. Of the accidents to employees on duty, 94 deaths and 1,835 injuries were the result of coming in contact with bridges, tunnels, buildings, or other obstructions while riding on cars or engines. The total number of deaths from this class of causes, including those of passengers and trespassers, was 146, and of injuries, 1,979. Thus, the deaths resulting from persons coming in contact with lateral or overhead obstructions were 1.4 per cent of the total fatalities and the

If conservation of human life is the object sought by such legislation, there are several other directions toward which it would seem that legislative action could be directed with greater prospect of getting substantial results. For instance, the enactment of stringent legislation regarding trespassing and its enforcement would do a great deal to stop the fatal accidents to trespassers, of which 5,558 were reported last year, or 38 times as many as were caused by narrow clearances. In fact, the deaths resulting from clearance conditions ranked eleventh in number in the 15 classifications of accidents given in the general summary prepared by the Interstate Commerce Commission.

The protection of its employees should be a primary object of all railroads. If this is the purpose sought by such legislation, attention may also be called profitably to the accidents occurring in coupling and uncoupling cars in which 195 employees were killed and 3,360 injured last year, largely as the result of carelessness of employees or their assumption of unnecessary risks. Also, 406 were killed by falling from cars or engines, and 154 in getting off cars or engines, while 1,296 were killed as the result of being struck by trains. The tabulation in the lower part of the preceding column taken from the accident report of the Interstate Commerce Commission for the fiscal year ending June 30, 1913, shows the number of accidents resulting from clearance conditions as compared with those due to other causes, the statistics regarding the former being given in italics.

An investigation made on one of the large systems with several thousand miles of line, and covering the five years from 1907 to 1911, inclusive, showed that only 5 persons were killed and 56 injured by accidents due to overhead obstructions and that 2 persons were killed and 80 injured because of lateral obstructions, while the total claims for the accidents caused by these lateral and overhead obstructions amounted to only \$27,000.

The nature of the obstructions causing the clearance accidents reported by the Interstate Commerce Commission is shown in the following table:

TABLE SHOWING SUMMARY OF ACCIDENTS FOR YEAR ENDING JUNE 30, 1913

Causes	Total employees on duty		Total persons	
	Killed	Inj'd	Killed	Inj'd
<b>Train accidents—</b>				
Collisions .....	280	3,367	457	8,031
Derailments .....	227	2,243	334	6,534
Accidents to trains, cars or engines, except collisions, derailments and boiler explosions .....	9	293	15	415
Bursting of or defects in locomotive boilers or boiler attachments .....	41	1,002	43	1,017
<b>Total train accidents.....</b>	<b>557</b>	<b>6,905</b>	<b>849</b>	<b>15,997</b>
<b>Other than train accidents—</b>				
Accidents to roadway or bridges not causing derailment, such as fires, floods, landslides, explosions, etc. ....	7	17	8	18
Coupling or uncoupling cars (exclusive of accidents with air or steam hose).....	195	3,360	195	3,361
While doing other work about trains (not in shops or engine houses) or while attending switches .....	143	24,114	143	24,114
<i>Coming in contact, while riding on cars, with overhead bridges, tunnels, or any signal apparatus, or any fixed structure above or at side of track.....</i>	<i>94</i>	<i>1,835</i>	<i>146</i>	<i>1,979</i>
Falling from cars or engines.....	406	6,647	904	7,659
Getting on or off cars or engines.....	154	9,358	843	14,486
Other accidents on or around trains not here named .....	66	1,959	146	7,322
Being struck or run over by engines or cars at stations or yards.....	752	1,664	2,226	3,474
Being struck or run over by engines or cars at highway grade crossings.....	...	...	1,125	3,080
Being struck or run over by engines or cars at other places .....	544	490	3,744	2,133
Other causes .....	21	270	221	3,065
<b>Total .....</b>	<b>2,382</b>	<b>49,714</b>	<b>9,701</b>	<b>70,691</b>
<b>Grand total .....</b>	<b>2,939</b>	<b>56,619</b>	<b>10,550</b>	<b>86,688</b>

Causes of clearance accidents	Total	
	Killed.	Injured.
Switch stands .....	6	396
Water cranes .....	6	154
Mail cranes .....	4	60
Buildings (at side of or enclosing track).....	26	244
Bridges, side .....	29	124
Bridges, overhead .....	51	315
Tunnels .....	6	9
Overhead wires .....	5	143
Poles (including signal, telephone, telegraph, electric light, warning poles, etc.).....	4	237
Miscellaneous .....	9	297
<b>Total .....</b>	<b>146</b>	<b>1,979</b>

It will be seen that 106 deaths and 683 injuries, or 73 per cent and 35 per cent, respectively, of the totals were the result of striking buildings and bridges. Eighty fatalities, or over one-half of all, resulted from striking bridges alone, while only six were caused by low or narrow tunnels, commonly considered dangerous obstructions. Thirty-four deaths resulted from miscellaneous causes, such as striking switch stands, mail cranes, water cranes, telegraph poles, overhead wires, etc.

In a study of this nature it is important to ascertain to what extent accidents of the class under investigation are increasing or decreasing. Taking the past ten years, covering the period of agitation of this subject, it is instructive to note that the number of employees killed on duty because of clearance conditions decreased from 584 during the five year period from 1904 to 1908, inclusive, to 427 for the five year period from 1909 to 1913, inclusive, a decline of 157, or 27 per cent. During the same time the number of employees in train service, who are exposed to accidents of this kind, increased from 279,831 to 305,195, or 9 per cent. The number killed per 10,000 employees,

injuries thus caused were 2.3 per cent of the total injuries. As to employees, 3.2 per cent of the fatalities to them and 3.2 per cent of the injuries to them resulted from the same classes of causes.

therefore, decreased from 4.2 to 2.8, or 33 per cent in 10 years.

This decrease would naturally be expected from a survey of conditions, and is due to a number of important influences. In the first place, the railroads have been the first to observe dangerous conditions on their lines, and have spent large sums of their own accord in remedying them. While it is not possible to secure data showing the number of accidents resulting from coming in contact with switch stands, mail cranes, etc., for any number of years, it is safe to assert that this class of accidents has been greatly decreased as the result of a very general campaign to move obstructions of this nature further back from the tracks. A great deal of attention has also been given to the "safety first" campaigns inaugurated on many of the roads, and they have been the means of directing attention to many other conditions which have been remedied. Also, the working conditions of trainmen have been greatly improved. The universal adoption of the air brake has made it unnecessary for them to expose themselves as formerly, while the increasing proportion of trains which move from one terminal to the next without breaking up, tends towards the same results.

#### PRESENT CLEARANCE CONDITIONS

With a desire to ascertain the present clearance conditions on the various roads throughout the country, we have collected data regarding the standards, and the extent to which they are conformed to, on 33 representative roads in all parts of the country, and having over 100,000 miles of line. The information naturally divides itself into two parts—one relating to the standards adopted and enforced on new work and reconstruction along old lines, the other relating to clearances actually existing on old operated lines.

A survey of the existing standards shows that a minimum lateral clearance of 7 ft. measured from the center line of the nearest track is commonly adopted, with only three roads reporting less and several more. Likewise, 22 ft. may be regarded as the standard vertical clearance from the top of the rail to the low point of overhead structures, with 8 roads using a less distance and several working to 23 ft. and 24 ft. These standards of 7 ft. and 22 ft. conform to the standard bridge clearance diagram of the American Railway Engineering Association. Several roads which report these clearances as standard on bridges, also state that greater clearances are found elsewhere.

It must not be assumed that no structures will be found which do not conform to the standard clearance limits on the different roads. These limits are merely adopted as standards to which all structures are being brought as rapidly as practical. From the data available it is estimated that about 25 per cent of the structures on old lines do not conform at present to the adopted standards of the various roads, although every road reporting states that its standards are enforced on all new construction and reconstruction where conditions permit. Obviously, there are certain places, especially in cities, where overhead viaducts or other limiting conditions make it impossible to comply with the standards. Also, all but four of the roads that reported state that their standard clearances have been increased since 1900, and most of them within the past four or five years. Obviously it is not possible or financially practicable to bring all the structures on a railway into harmony with these new standards at once. Large sums, however, are being expended in moving switch stands and buildings, widening cuts, securing standard clearances in the rebuilding of structures, etc., one road of 3,500 miles reporting having spent over \$1,400,000 on such work within the past few years.

Intimately connected with the subject of lateral clearances is that of the minimum distance between track centers. The standard recommendation of the American Railway Engineering Association is that tracks be spaced 13 ft. between centers. Twenty-three roads report this as their standard for main lines, while one reports 12 ft. and six 14 ft. or more. It is estimated that 75 per cent of the tracks conform to the standards adopted by the different roads for themselves and many individual roads

report that 100 per cent conform. The prominent exceptions to 13 ft. track centers are almost all in the east, where physical conditions and long established location make any increase in the distance between track centers difficult to secure and exceedingly expensive. In many of the eastern cities where the right of way is fully utilized, increasing the distance between the track centers means the elimination of one or more of the tracks entirely.

The same distance of 13 ft. is generally standard between the centers of main and adjacent side or passing tracks, although in several cases a wider spacing is used, three roads adopting 15 ft., one 16 ft. and one 19 ft. The purpose of this wide spacing is to protect employees when inspecting trains standing on the passing tracks or engaged in similar work from trains moving at high speed on the adjacent main track. About 60 per cent of the tracks adjacent to main tracks are reported to conform to the adopted standards of the various roads.

In yards the operating conditions are different, and it is entirely practical to place the tracks closer together. The speed of trains here is relatively slow, while the additional land which would be required if a wide spacing was adopted in a yard of 30 or 40 tracks, for instance, would frequently render such spacing in a yard impractical. As a result, several roads are using 12 ft. between centers in yards, although the majority use 13 ft. here also, and this latter spacing must be recommended as better practice. The replies indicate that over 90 per cent of the yard tracks conform to the existing standards of the individual roads. As yards are being rebuilt and new tracks added, the distance between centers is being increased so that the percentage complying with the standards is steadily increasing.

#### CLEARANCE LEGISLATION

As an indication of what may be expected in legislation on this subject, a digest of the existing laws and important orders of the various commissions is given herewith. The individual states have been most active in passing this kind of legislation, and clearance laws have been enacted in Indiana, Kentucky, Massachusetts, Michigan, Minnesota, North Dakota, New Hampshire, Ohio, Oregon and Vermont. The railroad commissions of some states acting under broad powers have issued orders having the same force as statutes. Such orders have been issued in California and Ohio, for example. Clearance bills have also been introduced in the national Congress at various times, but have never been passed. The latest was the Martin bill introduced in 1910, but which never came to a vote.

In Michigan the minimum allowable height of bridges above the track is 18 ft. except in cities. In Vermont it is required that as bridges are rebuilt they must have a minimum clearance between trusses of 15 ft. for single track and 27 ft. for double track, with a minimum vertical clearance of 22 ft. New Hampshire requires that no bridge shall be rebuilt with a vertical clearance of less than 21 ft. and further stipulates that no car over 14 ft. high be operated within the state. In Kentucky the law requires that no bridge shall be constructed with less than 22 ft. vertical clearance.

The state law of Indiana provides that it shall be unlawful to maintain a structure less than 21 ft. above the top of rail or within 7 ft. of the center of the track without the consent of the commission or to construct any structure within those limits unless it be within a city. It also requires that the nearest point of contact of a locomotive or car shall not be less than 18 in. from any structure without the consent of the commission. The state law of Ohio provides that structures shall not be less than 21 ft. above the track except where the commission finds such a requirement impractical, this exception applying only to side tracks. An administrative order of the commission dated December 30, 1913, specifies a minimum lateral clearance line 7 ft. from the center line of track down to 4 ft. above the top of rail, and extending down from this point to a point 5 ft. from the center of the track at the elevation of the top of rail. Further exceptions are also made for



freight and passenger platforms, while additional clearance is required on curves.

Minnesota and North Dakota are the states which have most recently passed clearance legislation, both having done so in 1913. The Minnesota statute forbids the construction or rebuilding of any structure within 8 ft. of the center line of the track or less than 21 ft. above the top of rail, although the railroad commission is given authority to suspend these restrictions at any particular place. The minimum distance between tracks is also fixed at 14 ft. for main tracks and 13 ft. for yard tracks. The North Dakota law forbids the operation of any locomotives or cars after January 1, 1915, which exceed 10 ft. 6 in. in maximum width and 14 ft. 2 in. in height. It also requires that no structure be maintained or erected along main or side tracks within 8 ft. of the center of the track or less than 21 ft. above the top of the rail. These clearance regulations, however, do not apply to any structures on the railroad right of way which are owned, leased, or used by any outside person or corporation. The railroad commission is also given authority to exempt any structure built prior to the passage of the act. This law also specifies that no tracks shall be constructed with less than 13 ft. between centers.

In Rhode Island it is required by law that no bridge shall be built over any railroad track with less than 18 ft. clear distance above the top of rail, excepting structures rebuilt to replace existing structures. In Oregon, while the railroad commission has not issued any definite orders prescribing clearances, it has recommended a side clearance of 8 ft. and a vertical clearance of 22 ft. above the top of rail for main tracks. Massachusetts requires that no bridge shall be constructed over a railroad at a height less than 18 ft. above the track, except by the written consent of the Board of Railway Commissioners. In Illinois, the railroad and warehouse commission insisted on 22 ft. overhead clearance wherever practical for a number of years, and about three years ago a rule was also adopted requiring yard tracks to be not less than 13 ft. between centers.

The Railroad Commission of California issued an order, effective January 1, 1913, providing for a minimum overhead clearance of 22 ft., and a minimum lateral clearance of 7½ ft. for tunnels and bridges, and of 8 ft. for water stations, fuel stations and other side structures. The minimum distance between the center line of yard and industrial tracks and structures, including platforms higher than 4 ft., is established at 8½ ft., while platforms under 4 ft. in height and over 1 ft. must be 6½ ft. from the center of the track. The minimum distance between the center lines of tracks is established at 13 ft., except that house and team tracks may be built on 11½ ft. centers. While the Corporation Commission of Oklahoma has not issued any definite orders regarding clearances, it has recommended a 22 ft. vertical clearance and 7 ft. minimum lateral clearance in some instances.

A bill now before the legislature of Georgia requires that all structures extending over 40 in. above the top of the rail of the adjacent main track shall be at least 8 ft. from the center of the track. However, all structures which it will cost more than \$100 to remove or renew individually, are exempted from the provisions of this act.

The Martin bill, which was introduced in the national House of Representatives in 1910, but which was never brought to a vote, provided that the maximum width of locomotives and cars should not exceed 10 ft. 6 in. and the height 14 ft. 2 in. It also stipulated that no structure of any kind should be closer than 6 ft. 11 in. to the center of the track excepting platforms not over 3 ft. 11 in. from the top of rail and the minimum vertical clearance was established at 20 ft. By the provisions of this act, the Interstate Commerce Commission was to be given authority to exempt individual obstructions from the provision of this act if conditions rendered this necessary. This bill also fixed the minimum distance between tracks as 12 ft. 6 in. and provided that all equipment, track and structures should be brought into conformity with it by January 1, 1912.

A bill introduced in the House of Representatives by Representative Stevens on December 15, 1913, intended to promote the safety of railway employees and passengers, provides among other things that the Interstate Commerce Commission shall have power to order any changes in track, structures, or equipment, which in its opinion will increase safety. No action has been taken on this bill, but if passed, it is probable that this broad provision would be interpreted to include authority over clearance conditions.

The railway act of the Dominion of Canada requires a vertical clearance of 22 ft. 6 in. and a clear headway of 7 ft. above the top of the highest car. The Board of Railway Commissioners is given authority to exempt any tunnel or bridge from the provisions of the act where only trains equipped with air brakes are operated. An order of the Board of Railway Commissioners, dated November 9, 1910, has fixed the lateral clearance at 6 ft. from the gage side of the adjacent rail, or 8.35 ft. from the center of the track.

#### FUNDAMENTAL DIFFICULTIES CONFRONTING CLEARANCE LEGISLATION

In view of the legislation passed and proposed, it is pertinent at this time to call attention to a few of the practical fundamental principles governing and some of the difficulties confronting such legislation, which it is evident have not been sufficiently considered in all cases in the past. In the first place, to be consistent, any legislation which specifies the limits within which structures may not be built, should also specify the maximum dimensions of the equipment operating within those limits. This has been done in the North Dakota law, and was included in the Martin bill referred to above. However, as a matter of public policy, it is difficult to see how it can be advisable to set by law any limit beyond which cars and locomotives cannot be built. The continuous record of railway development and increased efficiency of operation in this country has been made possible only by increasing the car and train load. Because of the increasing cost of operation the necessity for economy in operation was never greater than at the present time. A man is rash, indeed, who will venture to seriously predict where this development will terminate. As prominent a railroad man as the late E. H. Harriman predicted a few years ago that the railways of this country would eventually adopt a 6 ft. gage.

If it be necessary to enact any legislation it should refer primarily only to new construction and to reconstruction undertaken by the railways on their own initiative, and should not be retroactive. If reasonable, such legislation undoubtedly would not meet with serious opposition from the railways and would serve to secure uniformity of standards on all new work at once and gradually on old work. It is unfair and frequently not practical to require that all structures on old lines shall be made to conform to new limits within the short period of time given in most of the laws proposed, while it requires an expenditure of large sums of money which could be devoted to much better uses. It is the experience of all roads that practically all facilities, with the possible exception of large terminals in congested cities, are rebuilt every 15 or 20 years. As these structures are rebuilt from year to year they can be brought into conformity with any reasonable requirements without any great additional expenditures. By thus making haste slowly the desired conditions would in a relatively few years be brought about which radical clearance legislation could bring about in a shorter time only at an enormously greater cost.

Any clearance diagrams adopted must be practical and be framed with a full knowledge of railway operation. The clearance diagrams of Minnesota and North Dakota are glaring violations of this principle, being plain rectangles 16 ft. wide and 21 ft. high. Strict compliance with these requirements would necessitate the removal of all cattle guards, through girders, bridge portal bracing, station platforms, intertrack fences, dwarf signals and other similar facilities commonly regarded as not presenting any dangerous conditions.

The adoption of clearance regulations should be made only

after a careful study of local conditions in the territory under consideration. For instance, while horizontal and vertical limits of 8 ft. and 21 ft. may be entirely practical in Minnesota and North Dakota, where the railways have been built comparatively recently and where there are no congested terminals, these limits would be utterly impractical in Pennsylvania, New Jersey and New York, where track centers and building lines were established many years ago and can be changed only at enormous cost. With the present free interchange of traffic the same cars may be moved over any line in the country, and the danger of accident arises largely from a lack of uniformity in the location of structures rather than from the size of the equipment, and a man on an eastern road accustomed to its narrow clearances will not expose himself in the same manner as will a man on a western road. It is therefore difficult to see how one definite standard can be applied equally on roads in different parts of the country. It would appear to be more equitable to fix these limits for perhaps three or four large areas, taking these different fundamental conditions into consideration in the establishments of the limits.

If legislation of this kind must come it should be national rather than state. The confusion which would result on a road operating in 10 or 12 states, each with different requirements, is evident. Furthermore, such conditions would be an actual menace to the employees. Many crews pass through portions of two or three states on their regular runs, and the existence of different clearance standards is certain to increase the number of accidents. Besides, with the present attitude of several of the state legislatures, it is difficult to predict the limits to which these measures might go.

Within recent years especially the clearances of many structures embraced in grade separation work in cities have been established by ordinances or contract. In some instances, as in New York, these measurements have been established by orders of the state railroad commissions. There is thus opportunity for a conflict of authority which has been recognized in the laws of two or three states. Also, for state or national legislation to nullify the work already done on public order would not appear fair or equitable. In this connection it must be remembered that the establishing of limits, especially of vertical clearances, to apply within cities where grade separation is in prospect may render such work impossible. The adjustment of grades where several roads and numerous intersecting streets are involved is now frequently an exceedingly difficult problem to solve. If still further complicated by additional restrictions, some of these projects will undoubtedly have to be abandoned.

The suggestion has been made that limits could be set in the large cities and terminals less than those governing out on the line. It is the general practice for the road freight crews to leave their trains in the large yards in the outskirts of the important cities. Other crews then bring these cars in for distribution throughout the city. These transfer trains are generally short and of relatively slow movement, and wide clearances are not as necessary for them as for main line trains.

#### THE FINANCIAL ASPECT OF CLEARANCE LEGISLATION

In view of the present condition of railway finances and the immediate outlook for the future, any discussion of clearance legislation must center very largely about its cost. Very little exact data regarding the cost of such work has been collected. Two years ago when the Martin bill was before Congress, estimates made by 115 roads with 152,600 miles of main line showed an approximate cost of \$139,000,000 to comply with the lateral clearance requirement of 6 ft. 11 in.; \$135,000,000 to secure an overhead clearance of 20 ft.; \$167,000,000 to secure a minimum distance of 12 ft. 6 in. between tracks, and \$5,600,000 to bring the equipment within the specified limit, or a total of approximately \$450,000,000. Assuming a proportionate outlay for the entire mileage of the country, compliance with the Martin bill would cost the railways \$716,000,000, or over \$2,900 per mile of main line.

Estimates prepared more recently by 13 roads with 34,895 miles of line show a total cost of \$74,857,250 to secure a minimum vertical clearance of 20 ft., or \$2,145 per mile for these roads. Likewise, 14 roads with 28,736 miles of line estimate that it would cost them \$100,170,000, or \$3,486 per mile to secure a minimum clearance of 22 ft., while several roads considered this latter limit impractical and made no estimate. Similar figures of the cost of meeting a lateral clearance requirement of 7 ft. made by 14 roads with 30,077 miles of line totaled \$59,136,349, or \$1,966 per mile. On the basis of a minimum lateral clearance of 8 ft., 12 roads with 26,305 miles of line estimated the cost of complying at \$104,573,000, or \$3,975 per mile. While all the above figures are estimates, they show plainly that compliance with clearance legislation of this sort will be exceedingly expensive on any basis which may be adopted, and on the basis of the legislation so far enacted, it will not fall short of \$2,500 per mile of line for the entire country.

Such legislation will affect not only the railways but private industries as well. The above figures refer only to the expense that would have to be borne directly by the roads and do not include the cost of changes that would be made necessary about industrial plants, which would also reach a very high figure. One large corporation which made a careful estimate of the cost of compliance with the proposed Martin bill found that it would cost it alone over \$1,600,000. It is entirely probable that the total cost to railways and industries would exceed \$1,000,000,000. In North Dakota changes in industrial plants were obviated by exempting from the provisions of the law all structures upon the railroad right of way owned, leased, or used by private parties. It is difficult to see what difference it would make to a railway employee whether he was knocked from a car by an obstruction owned by the railway or one owned by a farmers' elevator company.

It is pertinent to inquire at this time just how the money necessary to comply with such requirements could be secured. As the expenditure could be justified only as an operating measure, and as it would not increase the value of the property or earn any return, it would seem that it should be charged to operation and not to capital account. But with the present decreasing tendency of operating revenues, it is difficult to see how work of such magnitude could be paid for out of operating income.

#### IS CLEARANCE LEGISLATION ADVISABLE?

In view of all of the above, the question arises whether clearance legislation is advisable. The analysis of railway accidents shows that only 1.4 per cent of all deaths and only 3.2 per cent of the fatalities to employees result from coming in contact with lateral or overhead structures. Likewise, accidents of this sort have decreased 33 per cent in the past five years. The roads have nearly all adopted increased clearance standards, and are bringing their structures into conformity with these standards as fast as is practical and at a relatively large expenditure of capital. It is therefore pertinent to inquire if the agitation for legislation on this subject at this time is not ill advised, and if as a matter of public policy it might not be more expedient to expend the large sums which clearance legislation would cost in other directions where the expenditure would secure greater returns from the standpoint of safety to the railway employees and general public alike, as, for instance, for the elimination of highway grade crossings.

It must be remembered that no matter what form legislation takes it will not eliminate all accidents of this nature. The accident reports of the Interstate Commerce Commission do not show the location of the obstructions causing accidents with reference to the tracks, so it is impossible to determine how many would have been avoided by the enforcement of any specific limits; but it is certain that some of these accidents would not have been prevented by the enactment of any reasonable legislation which could be enforced.



# Rock Island Interlocking Plant at Joliet

## New Design of Tower and Derails; Storage Battery Reduced from 400 to 160 Ampere-hours Capacity

A 224-lever all-electric interlocking plant was recently installed at the crossing of the Chicago, Rock Island & Pacific with the Atchison, Topeka & Santa Fe, and the Chicago & Alton, at Joliet, Ill. Aside from the fact that this is one of the largest interlocking machines west of Chicago, if not the largest, the original

the chord of the signal bridge is well shown in the illustrations of the two signal bridges, Figs. 1 and 3.

### POCKET DERAILS

Because of the location of the crossing directly in front of the passenger station, it was necessary to provide additional derails nearer the crossing than the standard 500 ft. required by the



Fig. 1—Signal Bridge with Dwarf Signal Mounted Above Lower Chord

features in the design make the installation of considerable interest.

High signals are three-position, upper quadrant, operating from zero to 45 to 90 deg., and dwarf signals are two-position,



Fig. 3—Signal Bridge with Suspended Dwarf Signal

Illinois law. These pocket derails are located only 50 ft. from the crossing, and in order to give rapid and positive action, a derail was devised which is quite similar to a movable-point frog. The frog-point is 7 ft. 2 13/16 in. long and the stock-rail from the point to the end is 13 ft. 4 in., the angle of departure being 9 deg. 1 min. The frog point has a 5-in. throw and when

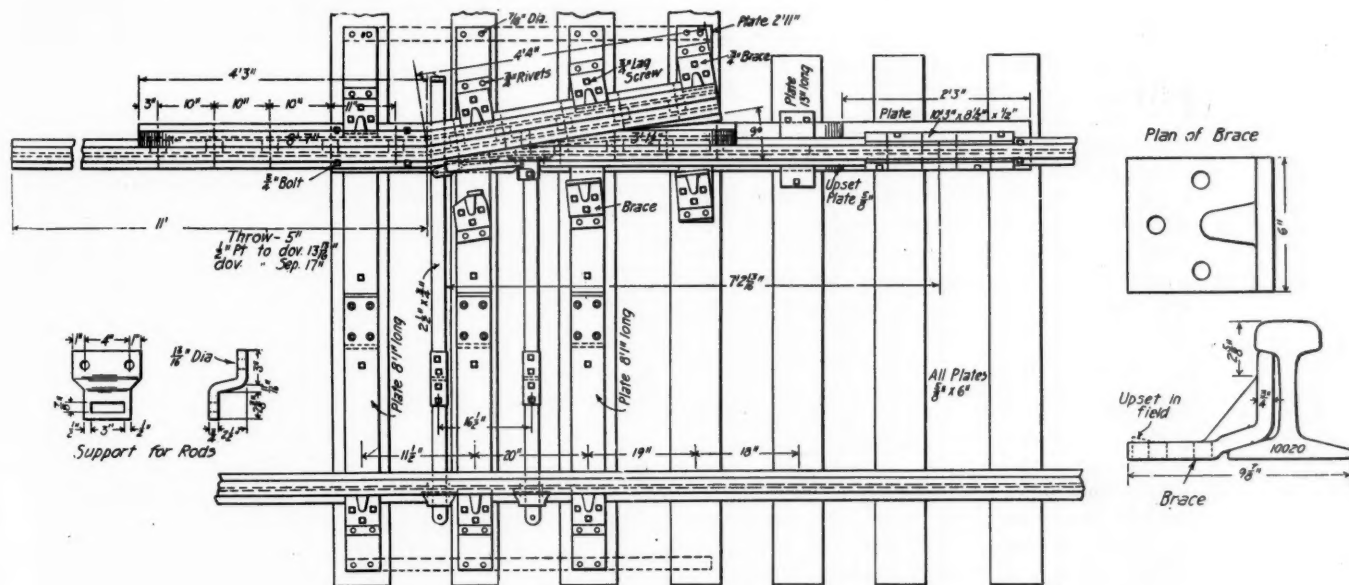


Fig. 2—Quick-Action Pocket Derail. Movable Point Frog Type

upper quadrant, operating from zero to 45 deg. High signals are in general mounted on signal bridges, as are also the dwarf signals which protect the pocket derails. The difference in the visibility of the suspended dwarf and the dwarf mounted above

open the gage side is supported and reinforced by rail braces placed at the proper angle so that when the point is open each brace gives support and strength to the point. This bracing is necessary, of course, as the point is subjected to considerable

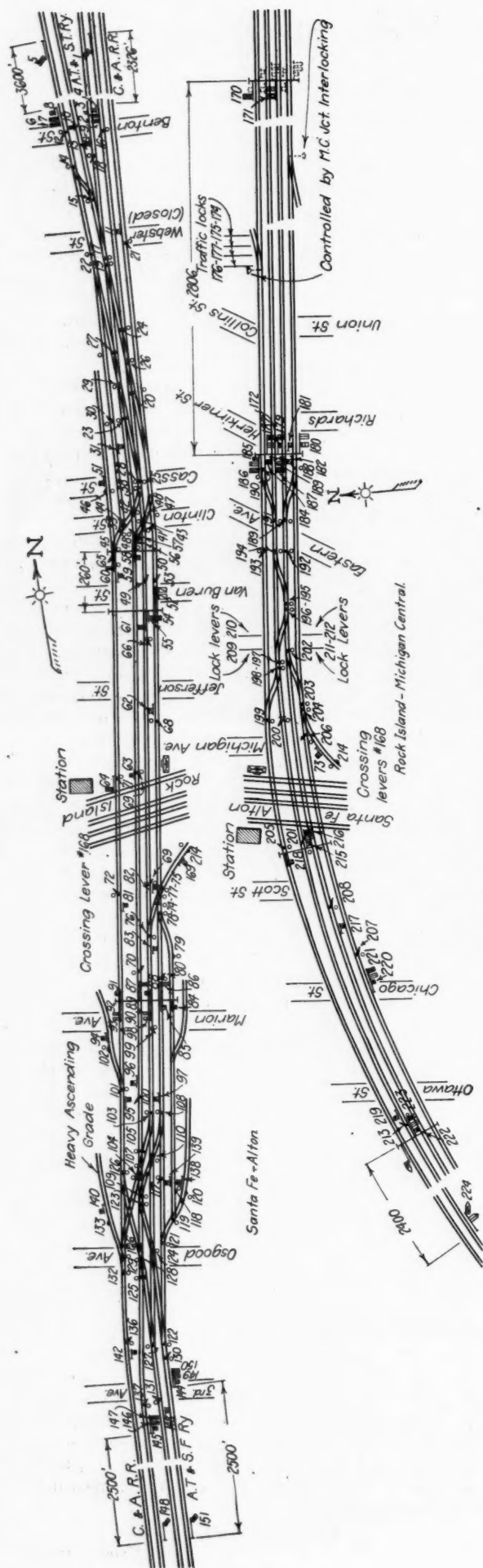


Fig. 4—General Layout of Tracks, Joliet Interlocking, Chicago, Rock Island & Pacific Railway

side thrust in deflecting the wheel to the ground. The rail braces are all upset in the field in order to allow for a certain amount of adjustment after wear takes place.

#### INTERLOCKING TOWER

The interlocking tower is of plaster on hollow tile, supported on a concrete wall foundation. The outside dimensions are 17 ft. 2 in. x 57 ft. 2 in. the tower having two stories and a basement.

Beneath the interlocking machine and extending its whole length is a pit, deep enough so that a man can stand in it upright when wiring, repairing or inspecting. This greatly facilitates the maintainer's work and assures better and quicker service.

Another feature which is worth noting is the tunnels, which are used for cable ducts. These are immediately beneath the ground floor; that is, in the upper part of the basement. There are two of these tunnels, built at right angles to each other. The one running lengthwise of the tower is 7 ft. wide and 10 in. deep and is used for Rock Island cables; the other is 6 ft. wide and 10 in. deep and runs out into a manhole between tracks extending some distance away from the tower. The latter tunnel is for the Santa Fe and the Alton wires.

The interlocking tower presents a neat and attractive appear-

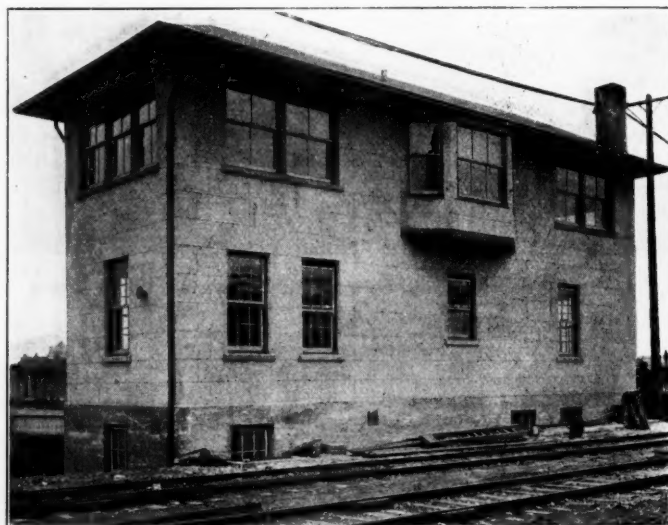


Fig. 5—Tile and Cement Tower

ance, the wide eaves contributing to a graceful design. The building is fire-proof, with the exception of the finish above the second floor. The hollow tile used was a recently perfected "National" type, having rough, wedge-shaped ribs on the outside. As the outer edge of the ribs is the thicker part the shape constitutes a good mechanical bond. The plastering was "Stone-cote," made by the Garden City Sand Company, Chicago. Two coats of the plaster were used, a scratch coat applied directly to the tile and a finishing coat applied to the scratch coat. The face of the coating was marked, before it had set, to resemble the Bedford stone in the station across the tracks.

#### PROVISIONS FOR REVERSING TRAFFIC

Traffic levers are provided for each of the tracks on the Rock Island road. These are operated in connection with a like number of levers in the adjacent Michigan Central Junction interlocking tower to the north. The home signals of one plant are the distant signals of the other.

If it becomes necessary to reverse traffic, the towerman who wishes to do so communicates with the other towerman, asking him to reverse the traffic-lever for the desired track. If the latter can allow this movement, he reverses the lever, which operation mechanically locks all levers controlling signals for movements opposed to the direction of traffic desired by the first towerman. The first towerman will then be able to reverse his lever. The



reversing of this lever mechanically unlocks the levers controlling signals for traffic in the direction desired.

#### POWER

Normally, and according to R. S. A. specifications, a storage battery of 400 ampere-hours would be required for this plant. To reduce the storage battery required, an auxiliary gasolene engine was installed in the tower. This will not furnish enough power to run the entire plant, but in connection with a small storage battery it furnishes a sufficient supply.

This arrangement requires an emergency signal lighting apparatus consisting of a motor-generator set, 110-volt d. c. motor, driven by power received from the 110-volt storage battery. This motor drives a one-half k. v. a. single-phase, 110-volt, 60-cycle a. c. generator, which furnishes current for lighting the signal lamps. It is equipped with a centrifugal governor which controls the alternating current within 5 per cent of the desired frequency, this being necessary on account of the voltage variations which take place in the storage battery.

Normally, power is furnished by the Public Service Company at 220 volts, 60 cycles, three-phase. This current drives a three-unit motor-generator set. A duplicate set is provided. Each set has a motor and two generators mounted on the same shaft. One generator has a capacity of 40 amperes, at 15 volts, d. c., and is used with five cells of storage battery for the track circuits. The other generator has a capacity of 15 amperes at 10 volts and is used with three cells of storage battery for line circuit current.

The power for the 110-volt storage battery used for operating the interlocking section is supplied from a 110-volt d. c. generator driven by a three-phase, 220-volt, 60-cycle, a. c. motor. The  $7\frac{1}{2}$  h. p. gasolene engine and generator is used with the 110-volt storage battery to generate current for operating the interlocking section in case of failure of the commercial power.

The interlocking was designed by the Chicago, Rock Island & Pacific signal department, H. K. Lowry, signal engineer. The construction was done under the supervision of C. Hartvig, foreman, and L. Wyant, superintendent of construction. All the interlocking apparatus was supplied by the General Railway Signal Company, Rochester, N. Y.

### SIR GEORGE PAISH ON SAVINGS UNDER GOVERNMENT OWNERSHIP IN THE UNITED STATES

The following letters which were published in the last issue of The Saturday Evening Post are self-explanatory.

CHICAGO, July 6, 1914.

Editor The Saturday Evening Post:

Dear Sir: One of the principal arguments of ex-Governor Stubbs and others who have advocated in this country the government ownership of railroads has been that vast savings could be effected by the use of government credit. Mr. Clifford Thorne goes so far as to estimate the saving at \$400,000,000, on the assumption that government could finance the properties on a 3 per cent basis; but ex-Governor Stubbs figures it at four.

Being very much in doubt as to these estimates and wishing for expert opinion I wrote to Sir George Paish, editor of the London Statist, and well known all over the world as an authority on financial matters. I inclose his reply, from which it appears that there might be a possible economy of sixty millions, and a later and ultimate saving of seventy millions, or one hundred and thirty millions in all, arising from the ability of government to raise money on better terms than can the railroads under present conditions.

But when this possible saving is put over against the inevitable extravagance and waste and loss of every government enterprise, it would melt so rapidly as to leave hardly a trace.

Yours truly, E. P. RIPLEY,

President The Atchison, Topeka & Santa Fe Railway System.

The letter to which Mr. Ripley refers in the above follows:

June 23, 1914.

Dear Mr. Ripley: I have been very much interested in your

letter of the sixth of June. According to the return of the Interstate Commerce Commission for the year ended June 30, 1911, the funded debt of the railways of the United States was \$9,816,079,405 and the interest accrued on the funded debt for the year was \$410,326,852. Thus the average rate of interest paid by American railways on their funded debt was only 4.18 per cent. Were the railways to be purchased by the government the money could not be raised on better terms than this. Indeed, if the government were to purchase the railways they would, in my judgment, leave these underlying bonds untouched. To issue nearly \$10,000,000,000 of government bonds to investors would be an impractical operation unless the bonds were taken in exchange for existing bonds. To induce the existing holders to exchange their present bonds for government bonds the latter would have to be offered at an attractive price. In purchasing the railways there would, of course, be no necessity for the government to take over the existing bonds, and I imagine that no attempt would be made to do so. Hence, there would be no saving of interest from government purchase as regards the funded debt, although later on it might or it might not be feasible to refund the existing debt into  $3\frac{1}{2}$  per cents as the bonds fell due for payment.

If refunding were possible the saving would ultimately be about \$70,000,000 per annum.

The amount of the capital stock of the railways at the end of June, 1911, was \$8,364,419,520, and the dividend distributed upon this stock from current income was \$302,037,778, or an average return of 3.61 per cent. From surplus, dividends amounting to \$158,157,598 were distributed. The total sum distributed from income and from surplus was \$460,195,376, or an average return upon the share capital of 5.5 per cent. Here again it would be quite impossible for the American or any other government to sell bonds to investors sufficient to provide cash to buy this vast quantity of railway stock from the existing holders. Ability to carry the transaction through would be governed by the price at which the government would offer bonds in exchange for stock. If the price were attractive, stockholders would take payment in bonds; but if it were not tempting, the government bonds would not be taken in payment, and the transaction could not be carried through. Possibly by offering to sell a 4 per cent United States government bond at par, and to take in exchange railway stocks on a 5 per cent basis (par for a 5 per cent stock), would be sufficient inducement. One must not forget, however, that many stocks are receiving no dividends whatever, and that substantial prices would have to be paid for these nondividend-paying stocks. When allowance is made for these various factors it would probably be found that the advantage in the matter of interest from government ownership would be much less than 1 per cent upon the total amount of common stock outstanding.

In brief, there would be no immediate profit from government ownership as regards the bonded debt of the railways, and as to the stock of the railways the advantage would be probably not more than about \$60,000,000 a year.

As to the undivided profits, the public gets the advantage of these anyway. When the surplus profits are put into the roads (as they are at present) the capital account is kept down, and it is not necessary to charge as high freight rates and passenger fares as otherwise would be necessary to pay interest and dividends. I imagine that under government ownership the policy of applying surplus profits to betterments would be much the same as the policy pursued by the companies hitherto.

Thus one cannot safely calculate a greater immediate profit from government ownership than about \$60,000,000 per annum—excluding, of course, subsequent economies, or subsequent greater cost of operation under government than under company ownership, and excluding a possible ultimate economy of \$70,000,000 per annum from the conversion of the funded debt upon the maturity of the existing bonds.

Yours very truly,

GEORGE PAISH.

E. P. RIPLEY, Esq.,

President, Atchison, Topeka & Santa Fe Railway.

## DARIUS MILLER

Darius Miller, president of the Chicago, Burlington & Quincy and of the Colorado & Southern, died at Glacier Park, Mont., on August 23, after an operation for appendicitis. Mr. Miller had been on a trip to Denver and Glacier Park, on which he had been accompanied by Mrs. Miller and Vice-President Hale Holden. The party had been joined at Glacier Park by President Louis W. Hill of the Great Northern; and in response to the summons of President Hill, special trains carried medical help for Mr. Miller from Spokane, Wash., and Havre, Mont., and later James J. Hill personally took surgeons on a special train from St. Paul, Minn. But before the party from St. Paul arrived it was necessary to operate; and even then the operation proved to be too late.

Mr. Miller's death removes from the railway field of America one of its ablest and most remarkable men. He was an extraordinary example of perfect tact, great geniality, fine social qualities and consummate diplomatic skill united with tireless bodily and mental energy, great business sagacity, ambition, a resolute will, rare courage, and administrative capacity of the first order.

He impressed everybody who came in contact with him with his accessibility, his suavity, his kindliness, his pleasantness and the perfect poise of his manner. Even after he became president of the great Burlington system, with its almost 10,500 miles of line, he received in his office almost all who called on him and listened smilingly and patiently to all they had to say. He never seemed ruffled, never seemed in a hurry, never seemed to have a single worry. If his visitor had a favor to ask, Mr. Miller was pretty sure to grant it, if he could, for he had a sincere liking for taking the time and trouble in his busy life to do nice things for others.

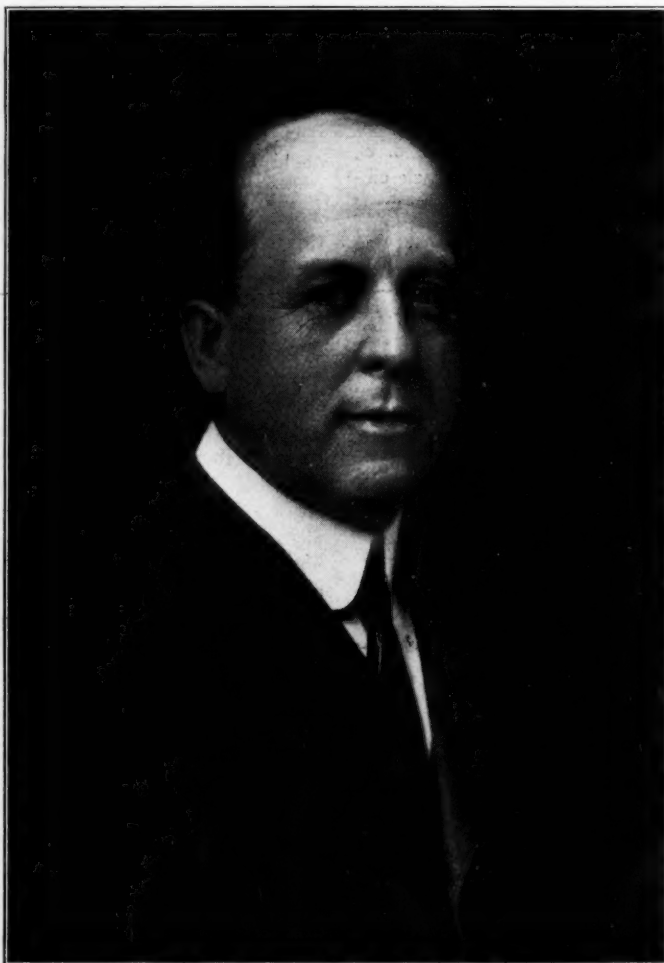
But this was only one side of his character. Those who saw much of him soon found that back of his easy-going manner he was a ceaseless, indefatigable laborer. The lowliest employee of the road did not put in any longer hours. During all of the year, except the summer months, his working day at his office was from about 9:30 a. m. to 7 p. m. Even after he went home it was a very common thing for him to sit up till midnight or later reading hour after hour reports, newspaper articles, magazine articles and books on subjects pertaining to transportation, and business and political matters in general. The same energy he put into the work he did himself he put into that of directing the labors of his subordinates. It was so when he was a traffic man, and even more so after he became president of the Burlington.

Mr. Miller was essentially and eminently pacific in his attitude toward competing lines, toward regulating authorities and toward the labor organizations. He was always anxious not to do or say anything which it was not fair to do or say

or that might provoke reprisals from concerns or persons that were attacked. But when there was occasion for it, he displayed an amount of courage that was hardly likely to be expected from one with his pleasant, urbane exterior. He met the attacks of aggressive competitors half-way, and no railway man in the country was more vigorously outspoken than he was during the last years of his life in replying in letters or through the press to persons or publications that indulged in unjust criticism of the Burlington in particular, or the railways in general.

One of the most interesting features of his career was his relationship with that great master of railroad transportation, James J. Hill. Mr. Hill's powerful, dominating personality has made it hard for some men to work with him; but Mr. Miller, from the time he went to the Great Northern as vice-president in charge of traffic in 1898, seemed to get along perfectly with Mr. Hill, and to none of his lieutenants, except his son, Louis W. Hill, did James J. Hill apparently give quite such unreserved confidence and support as to Mr. Miller. Probably this was due to Mr. Miller's remarkable combination of tact with courage, and urbanity with strength. With characteristic modesty, he always gave Mr. Hill the lion's share of the credit for the policies so successfully carried out on the Burlington; but doubtless Mr. Hill would be the first to give Mr. Miller full credit both for the part he took in shaping the Burlington's policies, and the equally important work he did in carrying them out.

Mr. Miller's experience until he became the road's president was that of a traffic man. He was so pre-eminently a good traffic man that it was expected when he left the Great Northern to become first vice-president of the Burlington he would have charge of the traffic of the entire Hill system. This plan, it is understood, was defeated by the proceedings of the federal government for the dissolution of the Northern Securities Company. The methods which



Darius Miller

traffic men had to use to get business were quite different in the earlier part of Mr. Miller's career from those which legislation and concerted action by the railways themselves have finally established. In those days railways competed in the same way and by the same means that other industrial and commercial concerns did. But while Mr. Miller was as skillful as anybody in using the older methods, his success as a traffic man always was due mainly to his clear-headed recognition of the fact that a railway's profits are derived chiefly, not from the business which it wrests from its competitors, but from the business which it develops on its own lines; and it was as a creator of traffic that he first established himself with that greatest of all traffic creators, Mr. Hill.

His reputation as a traffic officer was such that some curiosity was felt as to how successful a president he would make. That curiosity was soon satisfied. The Burlington property



under the presidency of George B. Harris, with Daniel Willard as vice-president in charge of operation, and Mr. Miller as vice-president in charge of traffic, had been put in fine shape. Coming to Mr. Miller, as president, in this condition, it presented him with a rare opportunity; and he and his able lieutenants took advantage of that opportunity to the fullest extent. Mr. Hill was the father of the tonnage system on American railways. He must, therefore, have regarded with satisfaction the advance in the Burlington's revenue freight trainload from 381 tons in 1910, the first year of Mr. Miller's administration, to 484 tons in 1913, an increase in three years of 103 tons, or 26 per cent.

Mr. Miller had a marked capacity for impressing on those who reported to him exactly what he wanted done and for then leaving them a free hand to do it. While he seldom interfered with them, he watched the results of their work closely and keenly, and his influence was felt in every department. Certainly, if his 3½ years' administration as president is a criterion he was one of the ablest railroad administrators that this country has had. Few other railroads have come through the last four years of business stress and strain as well off physically and financially as the Burlington, and the remarkable increase in its average freight trainload, with the economies in operation which it represented, is one of the chief explanations of its present relatively strong position.

A man with Mr. Miller's personality was bound to be popular with his business associates. But his circle of warm friends and admirers extended far outside to other railways, to other businesses, and embraced men in every walk of life.

When he was vice-president of the Burlington he served for years on the Traffic Committee of the Chicago Association of Commerce. When the Chicago Association of Commerce Committee of Investigation on Smoke Abatement and Electrification of Railway Terminals was appointed he was designated as one of its railway members. His railroad activities extended beyond his own lines. He was chairman of the executive committee of the Kansas City Terminal Railway Company, a director of the Union Station Company of Chicago, a director in the Union Station Company of Denver and a member of the committee of presidents having charge of the work of the Bureau of Railway Economics at Washington. His tact and influence were largely instrumental in securing finally the passage of the Union Station ordinance in Chicago last spring. He was a director in the Continental Commercial National Bank and the Union Trust Company of Chicago.

He was a self-made man in the best sense. Born at Princeton, Ill., on April 3, 1859, he was but 55 years old when he died. He entered railway service at 18 as a stenographer in the general freight office of the Michigan Central. From June, 1880, to February, 1881, he was a clerk in the general freight office of the St. Louis, Iron Mountain & Southern; from February, 1881, to October, 1883, chief clerk to the general manager of the Memphis & Little Rock, and from October, 1883, to June, 1887, general freight agent and ticket agent of the same road. From June, 1887, to July, 1889, he was general freight and passenger agent of the St. Louis, Arkansas & Texas, and from July, 1889, to December, 1890, traffic manager of the same road, being, it will be noted, only 30 years old when he was appointed traffic manager. From December, 1890, to May, 1893, he was traffic manager of the Queen & Crescent; from May, 1893, to September, 1896, he was traffic manager of the Missouri, Kansas & Texas system; and from September, 1896, to November, 1898, vice-president. He then became second vice-president of the Great Northern. James J. Hill himself was then, and for some years later, president of the Great Northern, and it was thus that Mr. Miller's business association with him began. He came to the Burlington as first vice-president on January 1, 1902, and succeeded George B. Harris as president on January 31, 1910.

He at the same time became president of the Colorado & Southern.

Mr. Miller's funeral was held at Trinity Episcopal Church in Chicago on Thursday afternoon at two o'clock. The active pallbearers were all officers of the Burlington and were as follows: W. W. Baldwin, C. G. Burnham, C. M. Dawes, E. A. Howard, H. E. Byram, G. W. Holdredge, E. P. Bracken, Hale Holden, T. S. Howland and C. I. Sturgis.

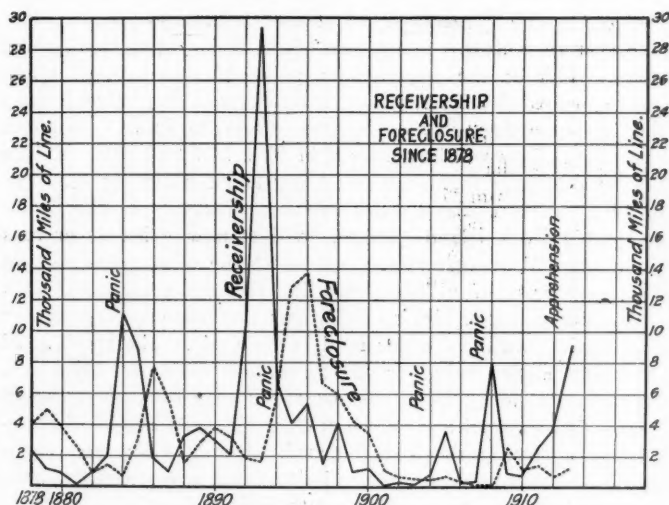
## RAILROAD RECEIVERSHIP AND REORGANIZATION

BY WILLIAM Z. RIPLEY

Ropes Professor of Economics, Harvard University

The *Railway Age Gazette* has for a number of years annually reviewed the statistics concerning receivership and foreclosure, regarding them as one of the best available criteria of the general condition of the transportation business. This subject is one of peculiar interest at the present time in view of the fact, as will appear, that almost 25,000 miles of line are now undergoing reorganization as a result of financial breakdown. The facts, year by year, are graphically presented upon the accompanying diagram.

The intimate relationship between railroad failure and industrial depression is matter of common knowledge. An outcrop of receivership for the weaker members of the railroad fraternity is one of the first signs of trouble. Such an announcement for the Erie Railroad, as Sprague puts it in his admirable study of



Miles of Line in Receivership and Foreclosure 1878-1913

panics for the United States Monetary Commission, "has been a customary feature of our commercial crises for half a century." In 1857, in 1873, with the Grant and Ward failure in 1884, in 1893, and again within a hair's breadth of it in 1907, has this historic property served notice upon the community of widespread financial distress. The Northern Pacific went down with Jay Cooke in 1873, and again twenty years later. The Philadelphia & Reading was in receivership in 1884, and nine years thereafter a second time. All along the line, to be sure, are scattered sporadic failures of important companies during time of fair weather, such as the Rock Island, the Reading again and the Union Pacific in 1880; the row-of-bricks downfall of the Gould roads in 1888-91; and the Chicago Great Western affair in 1909. These independent collapses, however, may be regarded as local phenomena due to individual mismanagement or inherent weakness. In the main, railroad failure, as of course one might expect, characterizes and concentrates about panic years. What is the situation at the present time?

The diagram of railroad receivership and foreclosure for a period of almost forty years, is based upon the miles of line

affected. The outstanding feature has already been mentioned, namely, the close connection between transportation and commercial or industrial distress. This is first noticeable on a generous scale in 1884, when 11,000 miles of line were precipitated into receivership; and again in the fall of 1907 (1908), when 18,000 miles of road succumbed. The short, sharp panic of 1903 alone stands forth upon this record by way of contrast, as practically unproductive of railroad disorder. It well deserves the name of a "rich man's panic." Interest at this particular time focuses naturally upon 1913-14. It appears as a time of "apprehension"; but that it is a period of "realization" of trouble as well, is indicated by the rising mileage of railroads in distress. Judged by this standard, the present day bears definite earmarks of severe depression. Yet the fact deserves mention, of course, that the railroads seem peculiarly marked out for suffering, for the well understood reason of steadily rising costs of operation along with fixity under governmental regulation of the rates chargeable for service rendered.

A notable feature of the diagram is the extraordinary prominence of railroad distress in 1893-94. All records in this regard—it is to be hoped forever—were broken when the control of an unprecedented mileage was handed over to officers of the state and federal courts. On June 30, 1894, 192 companies were in the hands of receivers, of which 126 had been consigned thereto during the preceding year. The total mileage operated by these defaulting roads was 40,818. The stocks and bonds affected by receivership aggregated two and one-half billion dollars—that is to say, one-fourth of the total railroad capitalization of the United States at that time. Thus was a dire penalty exacted for the violation of inexorable economic laws throughout a large part of the preceding decade of development.

Yet another point, while we are about it, is emphasized by this chart. This is the sequence in point of time of the allied phenomena of receivership and foreclosure. The latter follows the former in frequency like a shadow after an interval of about two years. This will be observed in 1884, 1893 and 1907. Events are now shaping themselves to bring about a similar sequence in 1914. Almost 23,000 miles of line, principally in the Gould and (old) Rock Island systems, are just now either in process or in need of reorganization. Most of the other properties in distress consist of a half dozen independent enterprises, such as the Kansas City, Mexico & Orient; the Atlanta, Birmingham & Atlantic; and the Moffatt road in Colorado. The troubles of these last named railroads are somewhat peculiar, and are, in the main, due to local circumstances; for most of them represent invasion of territories in which great banking and railroad interests were already firmly entrenched. Undoubtedly the hostility of the great powers to these independent companies has been an appreciable factor contributing to their downfall.

One feature of the present situation contrasts rather strikingly with past experience. A larger proportion than usual of these properties in distress seems likely to pass directly into reorganization without the intervention of receivership at all. On the whole, despite the recent distress there has been a relative decline in judicial interference with embarrassed roads. Decade by decade, a decided subsidence in the railroad mileage thrown into the hands of receivers has taken place. According to recent evidence in the *Railway Age Gazette*, as set forth in the following table, judged by any of the three standards, number of com-

	RECEIVERSHIP		
	First Decade, 1882-91	Second Decade, 1892-01	Third Decade, 1902-11
Companies .....	279	222	86
Mileage .....	37,816	62,266	17,574
Capitalization .....	\$1,884,000,000	\$3,543,000,000	\$1,245,000,000

panies, mileage or aggregate stocks and bonds, the last decade compares most favorably with either of the other two. The contrast with the 80's is even more striking, when one considers these figures in the light of the relative size of the railway net at that time. With all our phenomenal development, receivership still is absolutely less, and very substantially so, than ever before in a similar period of time.

Nor is this condition of diminishing receivership due to a mere change of fashion in procedure. Substantial economic forces are at work. In the first place, a rigorous process of natural selection has weeded out many of the feeble and unfit roads. A railroad seldom perishes from the face of the earth. It finds refuge instead in alliance with stronger companies. A more powerful and definitely organized banking support is also probably in some measure accountable for the greatly improved record. The prejudicial effect upon the prestige of official bankers is sufficient to make it worth their while to ward off receivership even at heavy cost. It is the railroads without banking friends, such as the Gould roads, which are taken most readily out of the hands of their stockholders and given over to the mercy of an officer of the court. But undoubtedly the most important influence of all in lessening the frequency of receivership, decade by decade, has been the growth and filling up of the country—traffic having developed, that is to say, more in proportion to the facilities for transportation provided. For it is one of the fundamental axioms in the economics of transportation that a growing density of traffic is the most certain panacea for the financial ills to which railroad flesh has fallen heir. All of which lends added interest to the record now in the making. Have we seen the end of present troubles? Or are there more receiverships yet to come? It is our prediction that already the worst is known and that better things will soon be in sight.

## A QUESTIONNAIRE FOR STATION AGENTS

Did you—

- See that brakes were set on those cars when you went home?
- Lock those stock chute gates when last used?
- Clean those batteries when they needed it?
- Let that guy get off with your hatchet?
- Turn in that extra impression book?
- Lock those trucks after being used?
- Put locks on those toilets?
- Fill that red light?
- Turn in that extra stationery?
- Make that broom last another month?
- Break that black lamp chimney, or clean it?
- Scrub the waiting room and office this week?
- Mark that shipment or guess it off with the shipper?
- Put that freight inside to keep from being pilfered?
- Look at switch stand after train passed to see if locked?
- Sign that bill of lading before you looked at the freight?
- Act courteously to that passenger, or snap his head off?
- Use a new lamp burner when that old one could have served?
- Remove that chunk from platform so no one would be injured?
- Put those stove legs and shovels where you could find them next year?
- Answer that telephone or make a customer wait for his information?
- Accept that shipment of household goods with pasteboard tags, or make them use linen tags?
- Leave the cork out of your ink bottle so it would evaporate, causing you to order again next month?
- Did You?

—M. K. & T. *Employees' Magazine*.

BRITISH RAILWAYS IN VENEZUELA.—It is reported that the new branch line of the so-called Bolivar Railway from Palma Sola to San Felipe is approaching completion, and that this railway paid in 1913 for the first time a small dividend on its common stock. The main line runs from Tucacas to Barquisimeto, with a branch to Aroa, where the South American Copper Syndicate, a British company, is working the copper mines very successfully. The Central Railway is extending its line which runs from Caracas inland, from Santa Teresa to Ocumare and Cuan and the work is progressing satisfactorily. The Caracas & La Guaira Railway had a successful year, though traffic on that and on all other lines was affected in the latter half of 1913 by political unrest.

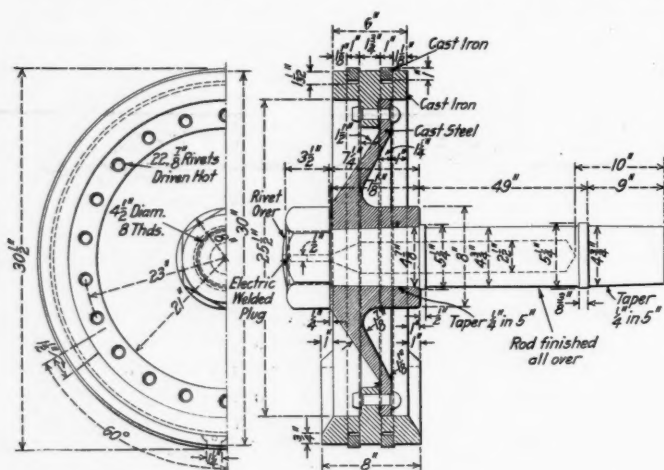


The use of special materials, as described above, has effected a saving in weight of reciprocating parts on each side, amount-

ing to 379 lb., or 16 per cent, as compared with the other locomotives using heavier parts. The balancing of the main wheels is greatly improved, and there is a material reduction in the amount of excess weight to be applied to the other wheels. The result is less wear and tear on the locomotive and track, while the lighter parts are more easily handled in the shop when making repairs.

The frames are 6 in. wide, each main frame being cast in one piece with a single rail front section; while the rear sections are separate, and of slab form. The frames on the original order of five engines had double rail front sections, both rails being separate from the main frames; and the rear sections were of bar construction with pedestals through which the trailer axles passed. The rear truck is of the Hodges type, and is equalized with the fourth and fifth pairs of driving wheels. The back truck spring hangers are pinned to brackets, which are bolted to the engine frames. These brackets, together with the foot plate, serve as supports for a wide expansion plate which carries the back end of the firebox. The front end of the firebox is also supported on an expansion plate. This is bolted to a steel casting, which supports the radius bar pin for the trailer truck, and also braces the frame at the splice between the main and rear sections.

The boilers of the ten new locomotives are all alike and are



Dished Piston with Hollow Rod of Nickle-Chrome Steel

of the same general dimensions as those of the 1912 order. The firebox is equipped with a Security sectional arch supported on four 3½ in. tubes, and a Street mechanical stoker is applied. The longitudinal seams on the barrel rings are all placed on the top center line. The main dome is placed on the second ring and the auxiliary dome on the third, and the seams on these rings are welded throughout their entire length. The opening under the auxiliary dome is 16 in. in diameter, so that a man can enter the boiler to make an inspection, without dismantling the fittings in the main dome. The superheater is of the Schmidt top-header type, with 45 elements, and a superheating surface of 1,232 sq. ft. With ample grate area and heating surface, mechanical stoking, and high superheat, this boiler is considered fully capable of supplying all the steam needed for the most severe class of service.

The continued use of this design of locomotive on the Burlington, after thorough service tests of the locomotives built two years ago, indicates the adaptability of the 2-10-2 type for heavy freight service. With 25 per cent greater hauling capacity than a Mikado type locomotive carrying the same weight per pair of driving wheels, this type will, under favorable conditions, effect a material reduction in the cost per ton mile of moving freight.

The principal dimensions and ratios are given in the following table:

General Data	
Gage	4 ft. 8½ in.
Service	Freight

Fuel	Bit. coal
Tractive power	71,500 lb.
Weight in working order	370,000 lb.
Weight on drivers	293,000 lb.
Weight on leading truck	27,900 lb.
Weight on trailing truck	49,100 lb.
Weight of engine and tender in working order	about 555,000 lb.
Wheel base, driving	20 ft. 9 in.
Wheel base, total	40 ft. 1 in.
Wheel base, engine and tender	74 ft. 9¼ in.

#### Ratios

Weight on drivers ÷ tractive effort	4.1
Total weight ÷ tractive effort	5.2
Tractive effort × diam. drivers ÷ total equivalent* heating surface	596.1
Total equivalent* heating surface ÷ grate area	81.8
Firebox heating surface ÷ total equivalent* heating surface, per cent.	18.8
Weight on drivers ÷ total equivalent* heating surface	40.7
Total weight ÷ total equivalent* heating surface	51.4
Volume both cylinders	26.2 cu. ft.
Total equivalent* heating surface ÷ vol. cylinders	549.8
Grate area ÷ vol. cylinders	6.7

#### Cylinders

Kind	Simple
Diameter and stroke	30 in. by 32 in.

#### Valves

Kind	Piston
Diameter	15 in.
Lead in full gear	¼ in.

#### Wheels

Driving, diameter over tires	60 in.
Driving, thickness of tires	4 in.
Driving journals, main, diameter and length	12 in. by 12 in.
Driving journals, others, diameter and length	11 in. by 12 in.
Engine truck wheels, diameter	33 in.
Engine truck, journals	6 in. by 10 in.
Trailing truck wheels, diameter	42½ in.
Trailing truck, journals	8 in. by 14 in.

#### Boiler

Style	Straight
Working pressure	175 lb.
Outside diameter of first ring	88½ in.
Firebox, length and width	132 in.
Firebox plates, thickness	Sides, back and crown—¾ in.; tube—¾ in.
Firebox, water space	F.—6 in.; S.—4 to 6 in.; B.—4 in.
Tubes, number and outside diameter	264—2¼ in.
Flues, number and outside diameter	45—5½ in.
Tubes, length	22 ft. 7½ in.
Heating surface, tubes and flues	4,966 sq. ft.
Heating surface, firebox†	383 sq. ft.
Heating surface, total	5,349 sq. ft.
Superheater heating surface	1,332 sq. ft.
Heating surface, total equivalent*	7,197 sq. ft.
Grate area	88 sq. ft.

#### Tender

Tank	Water bottom
Wheels, diameter	33 in.
Journals, diameter and length	6 in. by 11 in.
Water capacity	10,000 gal.
Coal capacity	15 tons

\*Total equivalent heating surface = evaporating heating surface + 1½ times the superheating surface.

†Includes brick arch tube heating surface.

INDIAN AMBULANCE TRAIN.—Certain portions of the North Western State Railway of India were constructed almost entirely for strategic purposes, which would be much assisted by a traveling hospital. The company has therefore built an ambulance train at its Lahore shops with this end in view. The train includes a hospital car, a kitchen car, a dispensary and staff car, and a medical officers' car. Each of these cars has a 61 ft. 9 in. body, and is carried on two four-wheeled trucks. The hospital staff car, which is 64 ft. 2 in. in length over the buffers, is divided into two sections. In one section are three compartments, of which one contains berths for two hospital assistants, another contains berths for four ward servants, while a third and larger compartment has berths for two Indian N. C. O.'s and four Sepoy ward orderlies. The other section contains four compartments, having four berths each, respectively, to accommodate four dhabies, eight cooks, and four sweepers. The hospital car is also divided into two sections, each of which contains a bath and lavatory and berths for 12 sick persons. The kitchen-car is divided into British kitchen and pantry, store, Hindu and Mahommedan kitchens. In the dispensary and staff car there are berths for two British N. C. O.'s and eight men, while the other half of the car contains dispensary and office, and beds for two assistant surgeons. Accommodation is provided in the medical officers' car for two lady nurses and two medical officers, and there is also the officers' mess and accommodation for four native servants.



# Annual Meeting of Superintendents' Association

## Discussions on Freight Transportation, Train Rules, Personnel; and Addresses by Two Veteran Officers

The twenty-seventh annual meeting of the American Association of Railroad Superintendents was held at the Hotel Cumberland, New York City, on Thursday and Friday, August 20 and 21, with President Charles Burlingame (Wiggins Ferry Co.) in the chair. The members of the association, nearly all of whom were from places west of Buffalo, were welcomed to New York by J. C. Lincoln, traffic manager of the Merchants' Association of New York. Mr. Lincoln was formerly a railroad traffic officer, and assured the superintendents that their society would have the cordial co-operation of the New York merchants.

President Burlingame, in his opening address, exhorted the members to put their best efforts into the committee work, with a view to sending sound and well-considered conclusions to the American Railway Association. The superintendents should never fear to recommend a new thing if it has merit. This association should back up its sister associations in every reasonable way. For example, the recommendation that rubber stamps be used to stamp the name of the shipping point on every package of freight should receive the attention of all superintendents; and if it is an economical and useful idea, it should be endorsed. The local freight agents' association has recommended that a standard board be put on steel cars for carrying cards; the superintendents should be able to say whether or not this proposal merits approval. The American Railway Association, with its co-ordinate associations of subordinate officers, ought to be developed into a strong law-making body. The railroad world is so extensive and important that it should be a law unto itself; and there is much work to do.

Mr. Burlingame, in working up interest for this meeting, had written to the general managers of railroads with which association members are connected, and of 50 such letters 41 had elicited favorable replies. Superintendents who may be in doubt as to whether they are justified, in their own interest, and that of their employers, in devoting time and energy to this co-operative work may be assured by this fact that the work of the association is appreciated among the higher officers.

Mr. Burlingame had received invitations from the Central of New Jersey, the New York Central & Hudson River and the Long Island roads requesting the members to avail themselves of all facilities and to inspect features of interest. On Saturday, following the close of the convention, many members accepted these invitations.

The report of the Secretary showed a membership of 266, an increase of 121 over the number reported one year ago. The members come from 135 different roads.

At this point the association listened to an address by R. V. Taylor, vice-president and general manager of the Mobile & Ohio, on "Organization." Mr. Taylor said in part:

"If I should be called upon for my opinion as to the official most important to the success of any railroad organization, I am certain that I could with perfect truthfulness say the superintendent. His duties are of a manifold character. They have to do not only with the maintenance of the property and the movement of the traffic, by which he is brought in touch with its actual working forces, but they bring him into close relationship with the patrons of the company from which it draws its life blood. Upon his good judgment and tact depends the relationship of the corporation to the municipalities, and every part of the management must rely upon his intelligence, integrity and industry.

"The subject of organization is a great one, and I can hardly hope to express in a condensed form some of the

general views founded on 37 years of active railroad experience. . . . The grand divisions pertaining to the maintenance and operation of a railroad's property, the roadway, the equipment, the transportation, the traffic, the legal, the accounting and the treasury departments are merely convenient groupings of individual factors which still retain their relationship to the whole, and are so divided only that the managing head may be enabled to quickly and fully understand the part which each unit is performing, and that he may be able to direct in the most effective way the forces at his command.

"I have been much impressed by the accounts of the hurried preparation for the great war which is now being waged beyond the sea; how as the successive grades of the reserves have been called for, each man responded by number, to find his uniform already provided and stored at a convenient central point and with the exact part he was expected to play, as well as the terrible purpose of the aggregate, grimly but clearly before him.

"In the creation of a railroad organization, the ruling purpose should always be to provide by a methodical and orderly arrangement of forces, the means by which the guiding hand may, in the most direct and effective way, reach down through each successive form of supervision to the man who actually does the work. . . . The managing man should never permit any delegation of authority on his part to destroy a direct and positive relationship between himself and each one of the individual units under his control. Napoleon Bonaparte, who was probably the greatest organizer of men the world has ever seen, prized his title of "Little Corporal," which he won upon the bridge at Lodi by leaving his position of command to fight in the ranks, more than all of the honors with which his imperial brow was crowned; and the connection he maintained with the individuals constituting his army is impressively illustrated in the picture which shows a sleeping sentry awakening to find the emperor keeping watch while he slept.

"Napoleon's best lesson, however, to any organizer of men, lies in the fact that he taught each of his soldiers to feel that he carried a marshal's baton in his knapsack. Any railroad manager who does not impress upon his men the fact that all promotions will be made from their own ranks, fails to employ the greatest power at his command to create enthusiasm and solidarity among his forces.

"In administering discipline, courage and consideration, firmness and fairness, should go hand in hand. As long as we deal with human agencies we must consider human imperfections. Weakness in the application of discipline brings the management into contempt, while extreme harshness creates a feeling of resentment scarcely less destructive to best organization.

"Esprit de corps is of the highest value. 'It implies sympathy, enthusiasm, devotion and jealous regard for the honor of the body as a whole.' It cannot, however, exist when discipline is absent. It is to the organization what the spirit is to the body; it is all-pervading and ever-present; it acts alike upon the highest and lowest; it makes the president of an organization speak with swelling pride of *his* officers and *his* men; it makes the call boy at the roundhouse couple himself and the president under the common word 'us.' . . ."

Speaking of the value of co-operation and hearty loyalty, Mr. Taylor gave examples from his own experience. Being away from home on the occasion of a great flood, he was gratified to find on returning that his subordinates had worked with great efficiency and had saved many thousands

of dollars for the company, by each doing his part in a well ordered plan. Every manager should have an organization which will work well in his absence. When the late Samuel Spencer expressed regret at the resignations of certain officers, Mr. Taylor assured him that his (Taylor's) single section of the Southern Railway system was prepared to supply the required number of officers to fill all vacancies, and, moreover, that there were understudies in the service ready to take the place of the men who might be thus promoted.

Continuing, Mr. Taylor said:

"It is popular in these days to criticize railroad management and railroad managers, and while I hold no brief for the misdoings, either large or small, which have crept into the management of some of the railroads of this country. I am certain that there never was a more courageous, honest, intelligent and industrious set of men, as a whole, engaged in any business, than those who are devoting their lives to the transportation service of this country; and whether for the purposes of peace or war, I do not believe there ever has been a more effective organization of men than that under which these great affairs are managed and controlled."

#### NEXT YEAR

The executive committee reported in favor of holding the meeting of the association next year at San Francisco, on Thursday and Friday of the third week in May; and this recommendation was adopted unanimously.

The nominating committee, W. L. Booth, W. J. Blizzard and J. H. Abrams, reported in favor of the re-election of all of the present officers and members of committees, and this conclusion was adopted by the association. It was based on the general feeling that the policies of the present administration ought not to be interrupted. The office of second vice-president, being vacant, was filled by the election of W. S. Williams (Illinois Central). The other officers are as follows: President, Charles Burlingame (Wiggins Ferry Company), St. Louis, Mo.; vice-president, H. R. Saunders (C. R. I. & P.), Kansas City; secretary, E. H. Harmon, St. Louis. Chairmen of committees: Transportation, E. H. Shaughnessey (C. & N. W.); Interchange Car Inspection, M. Marea (St. Louis T. & E.); Arbitration, A. E. Boughner (M. K. & T.); Train Rules, J. E. Scott (G. C. & S. F.); Executive, A. G. Smart (C. B. & Q.); Arrangements, G. J. Shreeve (Belt Ry. of Chicago).

#### THURSDAY AFTERNOON

The election finished the forenoon session. In the afternoon the first discussion was on the report of the committee on transportation, E. H. Shaughnessey, chairman. The report first took up the subject of marking, packing and stowing freight, and summarized what had been done by other associations. The committee recommended that the rules on this subject be rigidly enforced. The closest supervision is necessary everywhere, and yet no two roads appear to have the same instructions. A considerable number of roads have traveling inspectors to educate agents, but very few have printed instructions. A committee of the American Railway Association has formulated a code of rules, 89 in number, and the best thing that this association could do would be to devise ways of properly enforcing these rules, when promulgated. Continuing, the committee said:

"A division office should be created for the purpose of supervising the marking, packing and handling of freight and enforcing the rules in relation thereto. This officer should have authority equal to that of a trainmaster. If the business on the division does not warrant an additional officer, the duties assigned to the trainmaster or his assistants should be adjusted so that he can make this feature a part of his work without loss of efficiency along other lines. On one of the large western roads out of Chicago, just recently the trainmasters have been relieved of all routine office work so that their entire time could be given to supervision on the road, specializing in loss and damage matters; and good

results have been secured, principally along educational lines. Education is the prime necessity. The loyal conductor or brakeman who would not think of violating an operating rule will through ignorance cause continual damage to freight through improper loading. This also applies to the freight house forces. The only satisfactory way to correct them is to do so on the ground by a responsible representative. Admonition suited to the disposition of the person at fault, delivered verbally, is worth countless circulars.

"Reports on over, short and damaged freight should be handled by a higher priced clerk than is generally the practice at present. It is customary on some roads to delegate this work to a clerk once removed from an office boy, whereas it should be handled by a person of good judgment who can draw logical conclusions and compile satisfactory statistics for the superintendent and for the man on the road.

"This organization should be permanent and not dependent on crop reports. . . . Good results can only be obtained by constant energetic efforts throughout the year."

This part of the report was discussed at length by Messrs. Williams (I. C.), Smart (C. B. & Q.), Cox (Atlanta & West Point) and others. The Illinois Central made a great reduction in reports of irregularities by beginning, about five months ago, to rigidly enforce the rule that consignees shall receipt for all freight immediately on delivery. Mr. Farley (A. T. & S. F.) told of the work of the inspectors on the different divisions of that road, as described in the *Railway Age Gazette*, August 7, last. On the Burlington, the investigation of losses has been so improved that now, in 70 per cent of the cases, the claim agent has his data well in hand before the claim reaches him. On the Atlanta & West Point, by the employment of a special man, at \$110 a month, acting as the special traveling representative of the superintendent, information concerning losses is now promptly gathered and the work of the claim department has been almost revolutionized.

Vigorous expression was given to the idea that the superintendents' association, as soon as it becomes strong enough, should fight out with the traffic department the question of requiring more substantial packages. To accept goods in paper boxes of insufficient strength and at the same time try to move freight in trains of 100 cars each is an impossible task. The paper boxes now furnished by many shippers cannot be put in the bottom of a car, to be subsequently covered by other freight, and therefore it is impossible to load freight in station order. The weighing and inspection bureaus should be made use of in the enforcement of rules about packages and about marking, as the bureaus usually have a higher class of employees than do the roads. It pays to have enough men of the right quality to handle freight properly.

Mr. Farley thought that paper boxes of approved design caused little trouble. They are better than 75 per cent of the wooden boxes.

#### IDENTITY OF MEN EMPLOYED IN TRAIN AND YARD SERVICE

On this subject the committee reported additional information in connection with a paper read at the last annual meeting. In Chicago the street railways, employing large numbers of men, have photographs taken of all applicants. The same method is employed in St. Louis, Kansas City, Milwaukee and Los Angeles. A photographer contracts to make pictures of men at 7 for 15 cents or 11 for 25 cents. Photographs are attached to letters of inquiry sent out to learn about an applicant's record. In Chicago, a hundred undesirable characters were detected in two years by means of photographs. The committee believes the plan of requiring photographs of all applicants for employment would be entirely feasible and not expensive, and it would have a good moral effect from the beginning.

On this part of the report there was a long discussion in which were brought out many facts concerning difficulties dealing with "boomers" and others who apply for work in



freight yards and on freight trains when there is a rush of business, and who do not intend to remain permanently in the service. There are men who will send substitutes to the medical examiner, if this trick is not carefully guarded against, and, no doubt, the photograph safeguard would be circumvented if there were any possible way to do it. Sale of counterfeit letters of recommendation is said to be flourishing in more than one city. It was stated that in Oklahoma there is a law requiring that "service letters" given to employees shall be written on plain white paper, to be furnished by the employee himself. For reasons that can be readily understood, a rule calling for photographs would at once be objected to on the ground that the roads were preparing a "rogues' gallery."

Some members have had trouble with dishonest men applying for the position of telegrapher, and there was a demand that the photograph rule, if adopted, should be made to apply to that department as well as to the train-service department.

This part of the report contained no recommendation for any specific action and as the committee intends to continue its studies the report was referred back.

#### EFFICIENCY OF DIVISION ORGANIZATIONS

The secretary next read that part of the report dealing with the question of efficiency of division organizations. This consisted of mainly a strong plea for a regular assembling of the different subordinates of the division superintendent for consultation and for inspection trips. The committee described at length what was done on the Illinois Central last winter as reported in the *Railway Age Gazette*, April 17, 1914. Mr. Williams, superintendent of the Illinois Central division referred to, said that his road had adopted the plan of a special train, to run over the division, periodically, to be put in effect throughout the company's lines.

Mr. Boughner (M. K. & T.) told of the practice on his road. An inspection train is run over the road each month, carrying two cars to collect scrap; one oil car; one stationery car, and one with track supplies. Where there is not much scrap to be collected the cars are run on the local freight, but then no picking up is done. So far as the collection of scrap is concerned, the speaker thought that the use of such a train, in a business-like manner, ought soon to remove the necessity for it, but it is a great educational opportunity for each department to have a chance to check, at every station, the work in which he is interested.

On the Belt Railway of Chicago a special train is run every Monday to pick up scrap. Mr. Burlingame (St. Louis) has scrap thrown into large boxes, and a derrick car is sent out periodically to pick up these boxes and put them on platform cars. He thought that the piece-work method might be applied to this work.

This part of the report also was referred back to the committee, the chairman having been obliged to present it to the meeting without full consultation with all of the members.

In connection with the suggestion for further investigation by this committee the point was brought up by Mr. Cuineen (C. N. E.) that every railroad superintendent could do a good turn, when traveling on other roads, by reporting to the superintendent of such other roads any observations which he might make, looking to the good of the service. That many irregularities flourish because the superintendent cannot have his eye on all parts of the road at all times is too well known to need mention; but in addition to this, the mere fact that the superintendent-passenger is unacquainted with the road will often make his observations instructive to the man on the ground.

#### INCREASED EFFICIENCY OF FREIGHT CARS

Reporting on this subject the committee presented the usual arguments in favor of pooling freight cars. Mention was made of an arrangement, said to be in effect in Peoria, under which two roads having a heavy interchange business have

put on a joint crew to do all of the transferring, the expense being equally divided. Reporting on the handling of explosives, the committee recommended that the Bureau of Explosives have more lecturers and that all employees whose duties make it necessary or desirable should be required to attend the lectures. Most violations of the rules are discovered by the inspectors of the bureau, indicating that there is not sufficiently minute supervision by the officers directly in charge. Failure to remove placards from a car which has been used to carry explosives is one of the prominent causes of carelessness. The men come to have insufficient respect for the cards.

#### MR. UNDERWOOD ON THE QUALIFICATIONS OF THE SUPERINTENDENT

At the close of the foregoing discussion the meeting listened to a paper by F. D. Underwood, president of the Erie Railroad. Mr. Underwood began by recounting his own recollections of the time when he was an assistant superintendent and later a superintendent. Looking back he felt sure that in those days he fell far short of the essential qualifications which he was now describing and, said he, "I should like a chance on a busy superintendent's division, to prove that I could now be a better superintendent than I was then." The paper then went on to summarize the main qualifications that a good superintendent should possess, in substance as follows:

"A superintendent should not do physical acts that can be done by someone else. The bawling and hauling that we old-timers did is unwise from several points of view. A real superintendent is around, about, over and under the job; but never conspicuous. By this I do not mean 'gum shoe' methods.

"Reticence is a great quality. Hear everybody on *any subject they have a mind to exhibit*. Sort out what is useful; but say nothing. A silent man commands both respect and admiration. When one has to speak, speak low. A man who is never angry is not an efficient boss; but the spur of anger (and it is a good one) should be concealed. It should be used but to stimulate the stroke, never paraded.

"There are on all sides those who bluster, plead, lie and bring pressure to move a superintendent to undo really essential things. . . . Quietly sidetrack them when you are *sure* you are right; never willingly recede from a position that is fair. Be slow to take a position that contains a probability of retreat.

In the doing of all official things be open and frank. Many of your staff and all of the rank and file think that there are tricks in the trade. Show them that there are none. There is no more transparent business than operating a railway.

"Breaking a rule, or doing something outside of the rules is many times an offense to be condoned—provided the offender has brains. His action showed him fearless and perhaps resourceful. There are the seeds of a good man in every rebel. Mentally pussy-footed men are not desirable from a 100 per cent efficiency standpoint. Even the 'argufyer' has his uses.

"In the disciplining of employees some things had better remain unseen. Seek to instil into every employee the truth that each year of his service improves and cements his relationship with the company; that the aim is to have men permanent; to have them grow old in the service. Bear in mind that permanency makes for efficiency. . . .

"A superintendent is necessarily a go-between; between the public, the company and the employees. From distant headquarters he may be directed many times to do things that when done are misfits. He should be on such terms of confidence with headquarters that his opinion would be sought in advance, and should carry weight. Or, when action is taken without his knowledge or recommendation, his suggestion should have weight as a stay.

"You cannot do better than to stick close to the proverb: 'Wisdom is the principal thing; therefore get wisdom.' I sometimes think all cautionary signs should come down

and have painted in their place 'Wisdom.' Figuratively, it should be the last and the first word in every rule. . . ."

#### FRIDAY

The first business on Friday was a discussion of the report on train rules. Numerous proposed changes in the standard code have been under discussion for more than a year past by a committee of members of this association and of the Train Despatchers' Association. A report was made at the annual meeting one year ago; and the same subject was discussed by the train despatchers at their last annual meeting at Jacksonville, Fla. Considerable work has been done by the committee since then, and the present discussion was to explain the details of this work for the members of the superintendents' association. The report was in the nature of a progress report, as the proposed changes were not of such a nature as to be susceptible of discussion by the association in a general meeting, and no formal recommendation was presented by the committee.

The subject was presented by J. E. Scott (G. C. & S. F.), chairman of the train despatchers' committee. Mr. Scott presented cogent arguments in favor of certain changes designed to facilitate the movement of trains under circumstances where the conductor and engineman have to act without consultation with the despatcher, and pointed out certain features of the rules applicable to double-track operation which could be made applicable also to single-track. He also spoke in favor of the proposal to use green signals on the last train of a number of trains running on the same schedule, instead of using that signal on all the trains except the last. The discussion of the report of the committee also brought out an interesting discussion on the proposal to modify rule 93 so as to allow passenger extra trains to run through yards without reducing speed. The present rule is not interpreted alike by all railroad officers.

The discussion on train rules was followed by a short paper by E. H. De Groot (C. & E. I.) on "The superintendent, past, present and future." Mr. De Groot gave an interesting description of the old-time superintendent, the benevolent autocrat who accomplished great things with small resources. For the superintendent of today he recommended assiduous study, and he named a number of useful books which the railroad officer ought to read. His ideal for the future, while lofty in conception, called only for those qualifications which the ambitious and high principled superintendent can acquire by taking advantage of facilities for learning which are everywhere available.

The committee on interchange car inspection, M. Marea, chairman, presented a report recommending that the doors of freight cars be lettered, C on one side and D on the other, so as to facilitate the securing of accurate seal records. The proper identification of doors also would facilitate checking of bills for doors which are lost. Sometimes a number of bills are made for a single loss.

The committee favors a change in A. R. A. rule 15. Delivering lines should not be charged for transferring a carload of freight unless the car from which the goods are taken is delivered with a combination of defects as set forth in the M. C. B. rules. The committee declares that A. R. A. rule 15 should be printed in the code of the Master Car Builders' Association.

The committee discusses the standardization of side doors on box and refrigerator cars in the interest of greater safety and better economy. It also recommends that all end doors be made near the top of the car and be made to close and fasten on the inside. With doors thus arranged the danger and inconvenience incident to securing seal records of end doors would eventually be done away with.

This report was not discussed at great length, and it was finally referred back to the committee for further consideration. One of the members made a dissenting report, object-

ing to the recommendation concerning the lettering of side doors and also concerning a change in rule 15. On motion of J. M. Walsh (I. C.) it was voted that the recommendation concerning side doors be referred to the American Railway Association for its information.

Mr. Walsh next moved that all end doors be declared unnecessary, with a view to having them done away with. This led to considerable discussion. A strong argument in favor of abolishing end doors is found in the fact that many unlocated losses are due to thefts at end doors. It was said, however, that if there are no cars with end doors shippers will cut openings for themselves. Mr. Walsh declared that this would be better than having the large number of cars with end doors which we now have; it would be cheaper to repair the damage done by the shippers. A claim was made that long pieces of freight are delayed at large freight houses waiting for cars with end doors; but on the other hand, certain members testified that in their experience this inconvenience had not been of serious moment. It was observed that locking the doors on the inside would not clear up all of the difficulties, for consignees frequently would force open a door with an iron bar. Again, the absence of a lock on the outside would not make the seal taker's record unnecessary, for he should look to see if the door had been tampered with.

### MASTER BLACKSMITHS' CONVENTION

The twenty-second annual convention of the International Railroad Master Blacksmiths' Association was held in the Hotel Wisconsin at Milwaukee, Wis., August 18-20, as mentioned in the *Railway Age Gazette* of August 21, on page 361.

President H. E. Gamble, in his address, laid particular stress on the vastly important part the master blacksmiths play in the "safety first" propaganda. The master smith must not only make the conditions in his shop safe, but he should also see that all work passing through his shop is capable of passing the most severe inspection. The work of the blacksmith makes possible the building and operating of railroads, and every means should be taken to perform the work in a safe and efficient manner. No work that is at all questionable should be allowed to pass out of the blacksmith shop or its jurisdiction. A special smith is employed on the Pennsylvania Railroad to take care of tools and keep them in a good, safe condition, thereby protecting the workmen. By doing this the responsibility is placed on one man and better all-around results are obtained. The members were exhorted to enter freely into the discussion and give their ideas on the various subjects presented for the good of the association and the railroads represented by the members in attendance.

#### ADDRESS BY A. E. MANCHESTER

A. E. Manchester, superintendent of motive power, Chicago, Milwaukee & St. Paul, addressed the convention in part as follows:

Your association is one of those that has helped, by better methods and management, to make up for some of the losses in the earnings due to increased taxes and higher rates for material and wages, railroading standing almost alone among the industries as the one that has steadily and constantly reduced the rates on the thing it had for sale, namely transportation, and at the same time has to a large extent improved its quality. But the unfortunate feature of this all is that the public, the purchasers and users of this commodity, fail to appreciate the fact that they are receiving the best and cheapest transportation in the world, and it ought to be one of the aims and efforts of every association to work for the bettering of the methods of railroad building, maintenance, and operation, and to let their lights so shine that wherever an opportunity affords they will bring forth these thoughts in a form that will help to bring a better understanding of true conditions to the minds of the general public.



To illustrate, the railroad with which I am associated has, since the year 1875, reduced its average rate of transportation from 2.5 cents per ton per mile to a rate of 0.79 cents per ton per mile for the year which closed June 30, 1913. You will see from this that the road now receives an amount equal to one-third for the unit of service as compared with 1875.

Can you think of any other commodity that is today sold at any such a depreciated rate? When these matters are referred to, the answer will probably be that your railroad is vastly over-capitalized, and that you are looking for a return on a fictitious capital, but these statements are made without a true knowledge of the facts. As to the rate received for transportation, a year ago the average rate for all the railroads in the United States was 0.75 cents per ton per mile for moving freight. In England they received 2.5 cents, in Germany 1.44 cents, and in France 1.39 cents. If the rates received in the United States were equal to those paid in the European countries, the railroads here could readily meet almost any demand that might be made upon them so far as taxation, rates of pay, etc., went and still pay a reasonable dividend on the investment in the property.

I recall a few years ago attending a political meeting, in which the speaker was trying to show what great things his party had done for the good of the people of Wisconsin. He said, "We are building in Madison a new capitol building; it will be one of the finest in the United States, and will cost about \$6,000,000 to build. You will not have to pay one penny of the cost of erecting that building; it will all be taken out of the railroads." And the people cheered; that was a great hit. The party was getting something for nothing and they were to get the benefits. It is such a feeling and spirit as this that has got to be corrected and better understood before railroads will have a fair chance to maintain or improve their conditions.

#### FROGS AND CROSSINGS

W. F. Stanton, of the J. A. Fay & Egan Company, stated that railroads using manganese for the points in frogs and crossings realize that the work will not give the maximum service unless the bolts will prevent the moving or racking of the parts. In order to overcome the stretching and breaking of ordinary bolts, one road has resorted to heat-treating them, requiring the following physical characteristics of the metal: Tensile strength, 100,000 lb. per sq. in.; elastic limit, 75,000 lb. per sq. in.; elongation in 2 in., 15 per cent; reduction in area, 40 per cent. These bolts are hardened and tempered and have given very good results. In the discussion it was mentioned that the Oregon Short Line sends out a crew with a couple of cars fitted up to repair frogs and crossings on the line, such as putting in new rivets, bolts, etc. This has been found to be very satisfactory.

#### CARBON AND HIGH-SPEED STEEL

George F. Hinkens (Westinghouse Air Brake Company) spoke of the necessity for the tool smith to know definitely just the process to use in tempering each different kind of steel. All the different alloy steels, tungsten, chromium, vanadium, etc., will require different treatment, which can be best obtained by experimenting, as they will all require special processes. The furnace used for hardening high-speed steel should be so constructed that the oxygen of the air from the blast and fuel openings will not attack the metal. A furnace within heated from a furnace without would be ideal. Special care must be taken in not working high-speed steel at too low a heat.

H. A. Hatfield (Canadian Car & Foundry Company) believed that when ordering steel much better results will be obtained by giving full information as to what it is to be used for rather than by ordering by specification. In this way there can be no misunderstanding of what grade of steel is required, and the manufacturer will be in a better position to furnish it. After the steel has been received each tool made from each specific kind should be marked and the hardness noted so as to guide the tool smith in performing his work. The hardness testing machine is of particular value in establishing standard

tools and its constant use is advisable for this end. The location of the hardening plant should be given careful consideration and should be far enough away from heavy machinery to prevent vibration of the temperature recording instruments. A direct vision spectroscopy has been found advantageous in this work.

#### TOOLS AND FORMERS

H. G. Sharpley (Lima Locomotive Corporation) spoke of the importance of equipping smith shops with modern smith shop machines where the amount of work warrants their installation. Where these machines are installed it is the duty of the smith shop foreman to devise suitable tools and formers to be used in them so that they may be used to their greatest efficiency. There is no question that in many shops the cost of production could be materially decreased by the use of satisfactory machines and special formers.

Other papers were presented illustrating various types of formers that have been used on forging machines, that materially reduced the cost of production.

#### DROP FORGING

F. F. Hoeftle (Louisville & Nashville) spoke of the good work that may be accomplished by the use of drop forging machines. However, he mentioned that in many cases where the quantity of work did not permit of buying one of these machines, very good results could be obtained with drop forging dies under the steam hammer. For small jobs and those not requiring very accurate finish he has had very good success with cast iron dies. It was pointed out in the discussion, however, that these dies would not give entire satisfaction and steel dies would give much better service. Some members stated that they were forced to use cast iron dies in order to get any dies at all as they experienced considerable difficulty in getting the machine shop to provide the dies required. Scrap axles were recommended for making dies, but .50 to .60 per cent carbon steel was believed to give the best result. The main point in making dies for drop forging machines is to so design them that the metal will flow freely. In this respect, it was stated that where forgings of irregular shape are made the heavy offset should be made in the upper die, as the metal would flow much easier into that die than the bottom die.

#### SPRING-MAKING AND REPAIRING

F. F. Hoeftle (Louisville & Nashville) laid particular stress on the importance of obtaining the proper grade and kind of steel for springs, and in tempering, the amount of carbon contained in the steel must be considered. Springs should be set so that when they bear the greatest load they will carry it in an almost straight position. The life of springs depends a great deal upon the roadbed, flat wheels, low rail joints, design of spring rigging, etc. The spring leaves should be of equal thickness so that the load will be distributed proportionately on all plates. Other members pointed out that it is an excellent plan to punch the date when a spring is placed in service on the band so that an accurate record may be kept of their mileage. Vanadium steel has been used by a few of the members with great success, but it was pointed out that when tempering, a pyrometer should be used so that the temperature may be accurately regulated.

John Carruthers (Duluth, Missabe & Northern) gave the following process for tempering vanadium steel springs: The springs are first heated to a temperature of 1,700 deg. F. and set to shape, then cooled in oil. They are again heated to 1,650 deg. F., cooled in oil and then drawn in a tin bath to 1,000 deg. F. The tin bath is used instead of lead as it has been found vanadium steel will float in a lead bath. Pyrometers are used for all operations. The carbon steel springs are heated to 1,600 deg. F., and tempered in a 750-deg. F. bath. He has also found that by heat-treating old springs that have lost their elasticity they can be reclaimed and used very satisfactorily.

Other members stated that they eliminated the first quenching of the vanadium steel springs, as mentioned by Mr. Carruthers.

T. E. Williams (Chicago & North Western) stated that all the springs are made for the system at the Chicago shops, where they are tested for deflection and permanent set. The aim on that road is to keep all springs standard and standard spring hangers are used on all of the power. The North Western uses carbon steel for springs.

#### FRAME-MAKING

George Hutton (New York Central & Hudson River) stated that by means of the electric welding and oxy-acetylene processes it was now possible to make almost any frame weld without taking the frame from the engine. During the past eight months on the New York Central no frames have been removed from engines on account of breakage and only three have been removed in two years, all the frame welding being done by electricity. He also stated that he believed much less frame breakage would occur if all frames were properly heat-treated as well as annealed.

Many of the members contended that the best way, where possible, to weld a frame is at the forge, but granted that oftentimes it is not expedient to remove the frame from the engine, and in this case careful judgment must be used in making the weld. Considerable success has been obtained with both oil welds and thermit welds, and mention was made that there are many frame breaks that can be better welded with thermit than with oil. All frames should be annealed after welding, leaving the furnaces on until the frame has become cool.

J. M. Poland (Richmond, Fredericksburg & Potomac) said that out of 65 frames welded by electricity only one has broken, and that was on account of being made too close to a thermit weld. He has not found it possible to make a satisfactory electric weld next to thermit metal. On that road two men weld the frame at the same time, one on each side. The frame is heated before starting and the welding is done as quickly as possible to avoid too much expansion. Among the causes mentioned for frame breakages are ill-fitting pedestal caps and the improper alinement of turntables. Oftentimes it has been found that an engine will drop three inches in running on to a turntable. It was also believed that the practice of applying braces to frames rather than welding them at once is a bad practice, as it will cause the frame to break in other places.

#### HEAT TREATMENT OF STEEL

John F. Keller (Purdue University), chairman of the committee, submitted the practice recommended by the American Society for Testing Materials for annealing miscellaneous rolled and forged steel objects.

H. E. Gamble (Pennsylvania Railroad) described the plant for heat-treating the reciprocating parts of locomotives at the Juniata shops of that road. This company heat-treats the main rods, side rods, axles, crank pins, piston rods and valve motion parts, as well as a varied line of miscellaneous work. Their method of treating carbon steel axles is as follows: The axles are heated in vertical furnaces eight hours after the furnace assumes a constant temperature of 1,550 deg. F. and are quenched in water of 70 deg. F. for eight minutes. They are again reheated in a horizontal furnace for eight hours, after it has assumed a constant temperature of from 1,100 to 1,200 deg. F., and cooled in air, being placed on rails in a pyramid so that they will cool slowly. A physical test is made on all heat-treated parts. The sample is taken with a hollow drill which cuts the core  $\frac{3}{8}$  in. in diameter and 6 in. long. The axles, if they pass the physical test, are put through a drop test. The following are the physical characteristics required: 50,000 lb. per sq. in. elastic limit; 80,000 lb. per sq. in. ultimate strength; 20 per cent elongation; 40 per cent reduction in area. The chrome-vanadium axles are heated to 1,650 deg. F., then quenched in water at 70 deg. F., reheated to about 1,200 deg. F., and cooled in air. The physical tests require an elastic limit of 85,000 lb. per sq. in., and an ultimate tensile strength of

120,000 lb. per sq. in., with 20 per cent elongation and 50 per cent reduction in area. Mayari axles are heated to 1,500 deg. F., quenched in water at 70 deg., and reheated to 1,055 deg. F., and allowed to cool in air. The physical tests require a 70,000 lb. per sq. in. elastic limit, a 100,000 lb. per sq. in. ultimate tensile strength, with 20 per cent elongation and 50 per cent reduction in area. In connection with their heat-treating work, the steels are chemically analyzed in a laboratory and the physical tests are made on a 100,000-lb. tensile machine. He strongly recommended pyrometers in handling the work.

#### OTHER BUSINESS

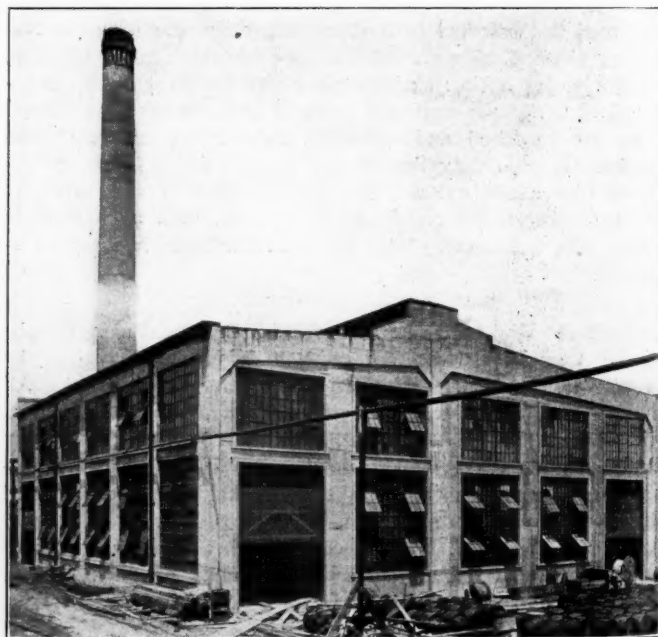
Among other papers presented at the convention were a number of shop kinks with drawings describing them. Thomas F. Keane (Ramapo Iron Works) read a paper on electric welding, in which he described different systems. T. E. Williams (Chicago & North Western) presented a similar paper on oxy-acetylene welding and cutting processes.

The following officers were elected: President, T. F. Buckley, Delaware, Lackawanna & Western; first vice-president, T. E. Williams, Chicago & North Western; second vice-president, W. B. Scofield, Illinois Central; secretary-treasurer, A. L. Woodworth, Cincinnati, Hamilton & Dayton, and assistant secretary-treasurer, George P. White, Missouri, Kansas & Texas.

Philadelphia, Pa., received the highest number of votes for the next place of meeting. The members of the association were invited to visit the shops of the Chicago, Milwaukee & St. Paul and the Allis-Chalmers Manufacturing Company while they were in Milwaukee.

### NEW SHOP BUILDING CONSTRUCTION ON SUNSET LINES

The Sunset-Central Lines have recently completed several shop buildings at Houston which are of somewhat unusual construction. When building shop structures or other buildings, where it is necessary to avoid columns and where panel openings



**Powerhouse After Completion Showing Temporary End Construction Arranged for Ready Removal When Necessary to Extend the Building**

over 25 ft. are required, the general practice has been to use I-beams, girders or trusses. However, the Houston buildings are entirely of reinforced concrete, including the long roof girders and the runway girders supporting the heavy 150-ton bridge cranes.

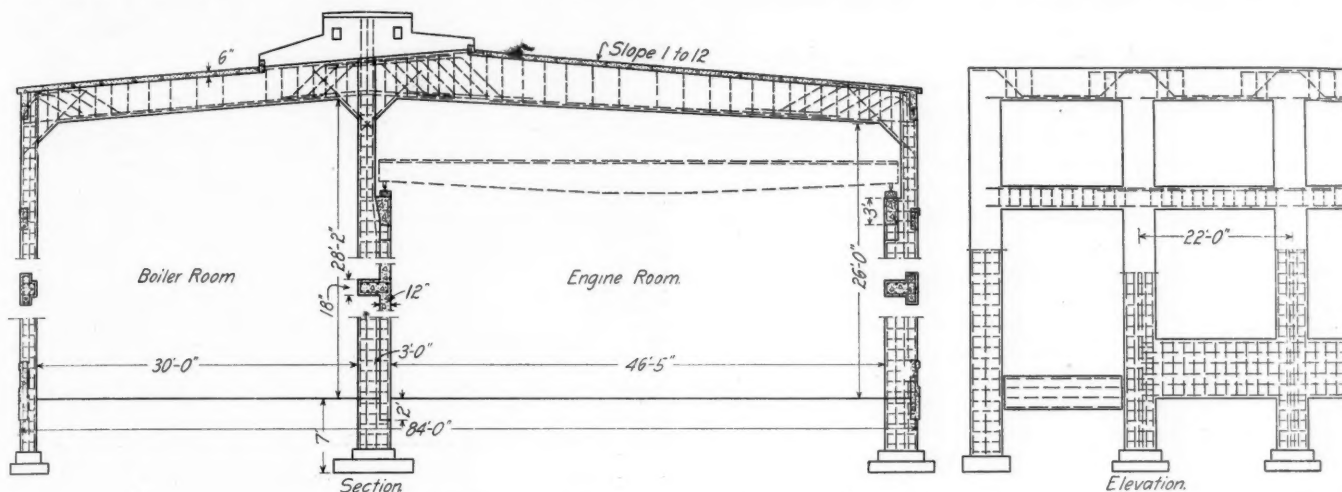


It was at first feared that the use of concrete would create the effect of clumsy members in the column and girder construction, but it was found that these worked out with very satisfactory proportions.

The principal buildings erected are the boiler shop, the power house and the combination machine and locomotive erecting shop. So far as is known, the roof spans are the longest that

the bending stresses in the columns due to eccentric loads resulting from the crane supports, but it was found that this effect was not serious from any possible condition of loading.

One of the most difficult things to contend with was the fact that the buildings had to be erected over the site of existing buildings, that shop operations could not be interrupted and that interference must be as little as possible. A number of

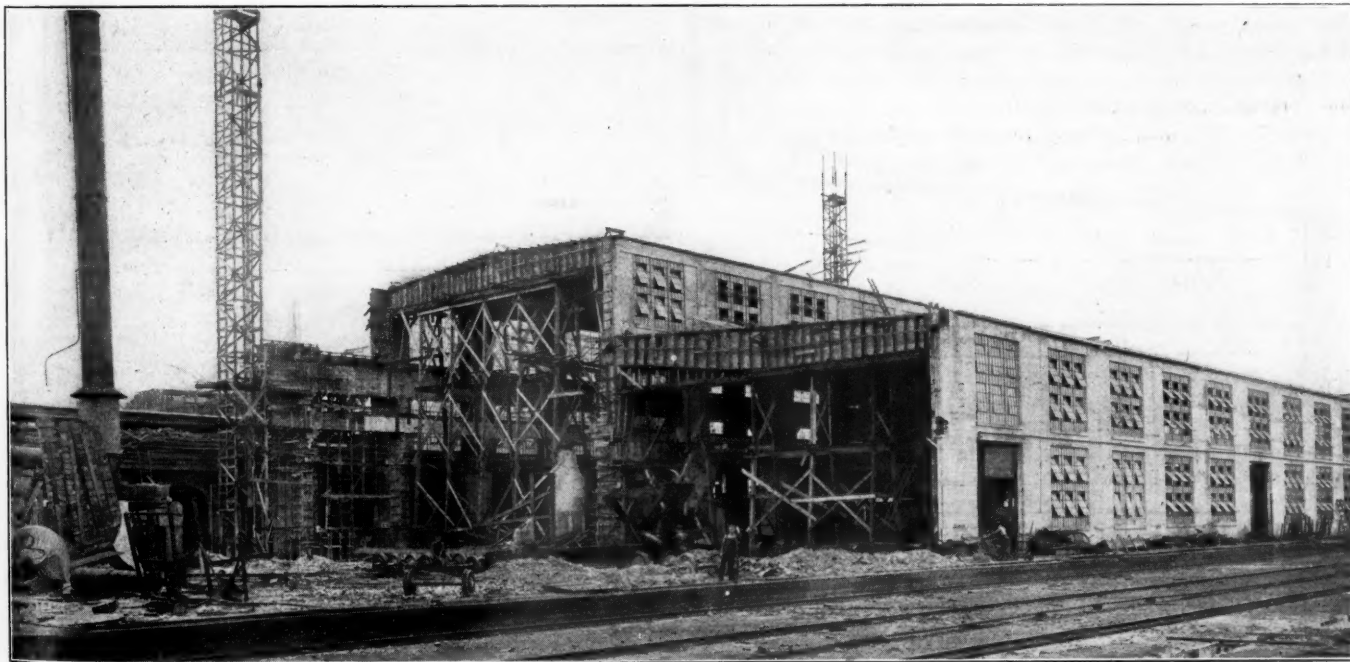


Section and Elevation of Power House Showing Concrete Construction

have been attempted in shop building work. All of the buildings shown were built without expansion joints, and as they have gone through both extremes of temperature without developing cracks anywhere, it is evident that the expansion has been well taken care of by the reinforcing steel in the concrete.

The entire building load is carried by the column foundations which are of the slab type. It was feared unequal set-

tlement might occur if the cranes were permitted to lie at isolated points over night or when not in motion. To overcome this, the area of the footings was increased to reduce the soil value under the footings with the heaviest crane load added to what was thought would not cause indenture of the soil. The dead load unit pressure was then determined and all footings designed for the reduced dead load only, the live loads being disregarded. Investigation was also made to determine



Machine and Erecting Shop Showing Nine Bays Completed and the Old Shop Cleared Away to Make Room for the New Construction

cut through the old to pass the vertical supports and column centering through, the old roof being left practically intact for the protection of the men and machines against rain and falling building material. Notwithstanding hundreds of mechanics were working underneath the building operations all during their construction, not a single personal injury resulted from falling material.

Owing to the crowded condition of the building site, due to the

immense amount of timber required for centering and the necessity of leaving space for shop materials adjacent to the work, the concrete materials had to be prepared under great difficulty and handled by towers and chutes quite a distance, much of it being handled through two tower lifts. Yet with all these disadvantages, very low unit cost figures were secured. The shops were built in sections of three and four panels at a time, and as fast as the centering could safely be removed the completed sections were put into service.

To economize in the false work and centering, panel lengths of all buildings were made uniform, and as far as possible the members in various buildings were made of the same or similar dimensions to permit using the centering oftener. In this way some of the centering was used as often as six times, and while not as smooth appearing concrete was possible with the last work done, it was successful as to appearance throughout and the cost of centering was reduced to a minimum. Crude oil was applied to the centering, and no trouble was experienced in the removal of forms.

All lighting wires were run in metal conduits embedded in the concrete work and to prevent mutilation of concrete members for the purpose of bolting pipe and other fixtures after the completion of the buildings which could not be anticipated by the motive power department, plate shapes were provided at intervals on the walls, columns and girders during the process of pouring the concrete. These were anchored into the concrete flush with the finish, and of such thickness as to permit tap bolting.

Only preliminary and general plans had been completed when information was received that the funds had been appropriated for the work and the officers were asked how quickly actual construction could be gotten under way. As all computations had been completed and foundation investigations had been made, it was only a question of how quickly concrete ma-

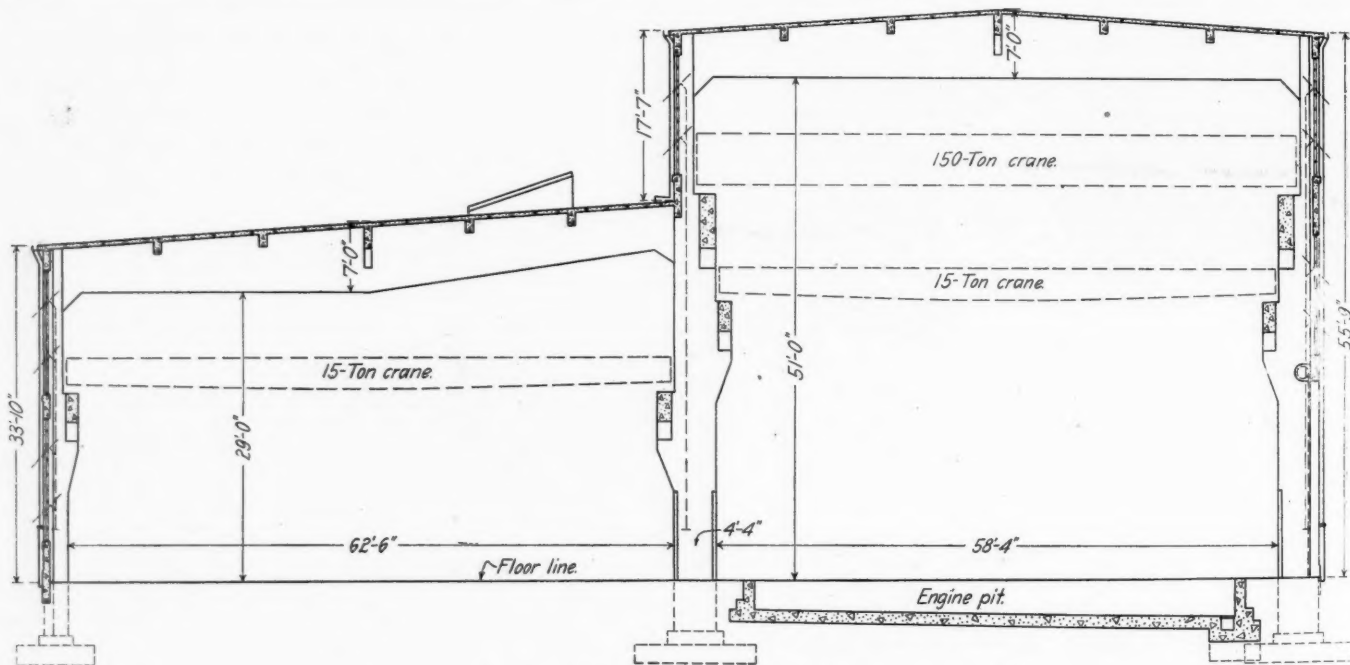
timated that six months' time would have been consumed in designing and getting sufficient material on the ground to begin work. It is believed that concrete is a more suitable material for buildings exposed to the fumes of locomotive smoke than structural steel and because of the difficulty of protecting steel and the cost of this maintenance charge. Also in addition to



Interior View of Boiler Shop Showing the Completed Building and Machinery and Fixtures Being Moved In

being the more permanent, concrete is more fireproof, and for these reasons much of the recent construction work on this road has been of concrete, including a roundhouse, small machine shop and an oil house at Beaumont.

What is considered a very cheap warehouse building was built about four years ago at Galveston, on the property of the



Section of Machine and Erecting Shop

terial and reinforcing steel could be assembled. It was found that the reinforcing rods for foundation work could be secured from stock and that cement, sand and gravel were immediately available. Hence actual construction work was under way within two weeks after instructions were received to proceed. As the foundation and preliminary work necessarily consumed considerable time, ample opportunity for detailing of the superstructure was allowed.

Had the buildings been made of structural steel, it was es-

Southern Pacific Terminal Company. This structure is 1,000 ft. long, and is entirely of reinforced concrete. It is divided into four compartments, and otherwise satisfies conditions imposed by the underwriters, and was built at a cost slightly less than \$1 per sq. ft. of floor area. Although occupying a site which was dredge filled with quicksand from Galveston bay, this building is supported entirely on floating foundations.

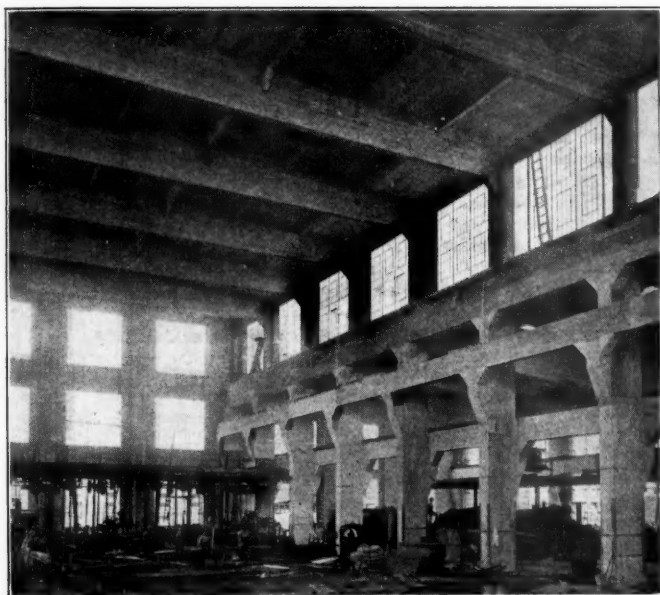
The machine and erecting shop consists of 14 panels each 22 ft. long, with a total length of 312 ft. over all. In cross section



and arrangement, the building is of the type generally followed for this kind of shop. The erecting wing is 51 ft. high from the engine pit rail to the underside of the main roof girder and permits of the movement of the heaviest locomotive from the entrance track to position in any stall in the building by means of a 150-ton capacity Niles bridge crane. The roof girder span is 67 ft. long over all, or 65 ft. between centers of supports. A 15-ton Niles crane is also provided which travels below the 150-ton crane for use in handling parts of locomotives. This also clears the tops of locomotives standing under repair. In the machine room section, there is another 15-ton crane. The machine room is the same width as the erecting room, but is only 29 ft. high to the underside of the roof girders.

The runway rails for cranes are all carried on reinforced concrete girders; the one for the 150-ton crane which has a dead weight of 205,000 lb. has a direct support on the columns, while the smaller cranes have supports for runway girders bracketed beyond face of the columns which construction was followed to hold down the size of the columns.

The boiler shop is 120 ft. wide by 314 ft. long outside and is divided into two longitudinal bays 56 ft. 2 in., and 53 ft.



Interior View of Machine and Erecting Shop Showing the Building Practically Completed

in the clear between columns. One bay is served with a 15-ton, and the other with a 50-ton crane. There are 14 transverse bays, 22 ft. center to center, opposite the corresponding bays of the machine and erecting shop with tracks running through between the two buildings.

The oil house is 35 ft. wide by 72 ft. 6 in. long, with a basement the full size of the building for receiving the oil storage tanks. There are five 8,000-gal., two 1,000-gal., and two 480-gal. tanks in the basement, and one 8,000-gal. and two 2,000-gal. tanks buried outside of the building for storing gasoline and distillate. All of the tanks are connected to self-registering pumps, located in a convenient position in the oil house.

The power house is 84 ft. wide by 90 ft. long outside, having a boiler room 32 ft. 6 in. wide inside. It is of sectional construction, provided with a temporary end construction so that additional sections may be annexed when required. The boiler room is proportioned to suit the type of boilers installed, but is unlike other modern boiler rooms, in that it is not arranged with coal bins and ash pits; as crude oil fuel is used exclusively by both for road and stationary service and its supply seems so extensive that the use of coal is not contemplated. The stack, which is also of reinforced concrete construction, is 6 ft. 6 in. in diameter and 125 ft. high. Under average con-

ditions in coal plants this would mean a stack capacity of about 800 h. p., but serving as it does, the crude oil furnaces of the boilers, the capacity is easily 1,400 h. p.

One interesting feature in the erection of the boilers and power house machinery was the pipe work. Detail drawings of all steam, water and air piping were prepared and the pipes and fittings were ordered from a Chicago manufacturer completely bent and fitted for erection. The placing of boilers and machinery and the cutting and bending of pipes by the manufacturer were accomplished so accurately, in accordance with the design, that it was necessary to cut only one length of straight pipe in the assembly of the complete equipment.

## TRAIN ACCIDENTS IN JULY<sup>1</sup>

Following is a list of the most notable train accidents that occurred on railways of the United States in the month of July, 1914:

Collisions.					
Date.	Road.	Place.	Kind of Accident.	Kind of train.	Kil'd. Inj'd.
3.	Southern .....	Roysters, S. C.	rc.	P. & F.	1 6
3.	G. S. & Florida.....	Tamworth.	bc.	P. & P.	0 35
Derailments.					
Date.	Road.	Place.	Cause of Derailm't.	Kind of train.	Kil'd. Inj'd.
7.	Central Vermont.....	Sheldon Spgs.	washout	P.	0 9
11.	Chicago, M. & St. P.	Tacoma.	fire	F.	3 13
22.	Mobile & Ohio.....	Artesia	unx.	F.	3 0
26.	Galv. H. & S. A.....	Spofford.	fire	P.	0 1
27.	Cin. N. O. & T. P....	Rockwood.	acc. obst.	P.	1 4
29.	Central N. E.....	Holmes, N. Y.	d. eq.	F.	1 2

The collision at Roysters, S. C., on the 3rd of July resulted in the death of the engineer of the passenger train. Passenger No. 114 ran into engine No. 701. Three passengers and five trainmen were slightly injured. The collision was due to the negligence of the man in charge of the light engine, which was on the main track without right.

The trains in collision at Tamworth, near Macon, Ga., on the 3rd were northbound passenger No. 2, second section, and southbound passenger No. 7 of the Macon & Birmingham. The trains met on a trestle 30 ft. high, but neither train was running very fast and the engines, though badly damaged, were not thrown off the track, except the front wheels. A carload of beer on the southbound train next to the engine was wrecked. About 30 passengers were injured, but all of the injuries except six were slight. Five trainmen were injured. The collision was due to the negligence of the men in charge of the southbound train, who miscalculated time and encroached on the time of the northbound.

The train derailed near Sheldon Springs, Vt., on the evening of the 7th, was a southbound passenger. The fireman was badly scalded and seven passengers, one mail clerk and two trainmen were injured. The derailment was due to a heavy rain storm which washed out the roadbed.

The train derailed at Tacoma, Wash., on the night of the 11th, was a switching freight, and the cause of the derailment was the distortion of the rails of the track by the heat of a fire in a lumber mill. The switching crew risked their engine and their lives in running a gauntlet of flame to save some loaded lumber cars in the mill yards from a fire that was rapidly burning up two large mills; but the engine ran off the track in the midst of the flames; and of the 17 men on it 3 were killed and 13 injured.

The train derailed near Artesia, Miss., on the night of July 22, was a northbound freight, and twelve freight cars broke through

<sup>1</sup>Abbreviations and marks used in Accident List:  
rc, Rear collision—bc, Butting collision—xc, Other collisions—b, Broken—d, Defective—unf, Unforeseen obstruction—unx, Unexplained—derail, Open derailing switch—ms, Misplaced switch—acc, obst., Accidental obstruction—malice, Malicious obstruction of track, etc.—boiler, Explosion of locomotive on road—fire, Cars burned while running—P, or Pass., Passenger train—F, or Ft., Freight train (including empty engines, work trains, etc.)—Asterisk, Wreck wholly or partly destroyed by fire—Dagger, One or more passengers killed.

a trestle bridge and were wrecked. Three trespassers riding in a box car were killed. The cause of the derailment was not discovered.

The train derailed near Spofford, Tex., on the 26th, was a westbound through passenger. The engine and first car fell through a bridge which had been weakened by a fire. The engineman was seriously injured.

The train derailed at Rockwood, Tenn., on the 27th, was south-bound passenger No. 1. The engine struck a hay-baling machine on a highway crossing and was ditched; and the engine and first three cars were overturned. The baggageman was killed and two passengers and the two men on the engine were injured.

The train derailed at Holmes, N. Y., on the 29th, consisted only of a locomotive, which was running backward. It was overturned. The fireman was fatally scalded and the engineman and flagman were badly injured. The cause of the derailment was the breaking of a pin, disarranging a brake beam of the tender.

*Electric Car Accidents.*—Of the half dozen serious accidents to electric cars reported as occurring in the United States in July, three were attended with fatal results. Elyria, Ohio, 7th, collision with work train; nine persons injured, one of them fatally. Norfolk, Va., 17th, electric cars ran into side of freight train; four killed, many injured. Westport, Conn., 23rd, collision, four killed, many injured. Collisions at Lynn, Mass., and Faribault, Minn., injured a score each.

## A LOOK AHEAD

The New York Evening Post, over a hundred years old, gives variety to its miscellany by reprinting from day to day items which appeared in its columns in the year 1814. In like manner we give below some extracts from the columns of the *Railway Age Gazette* of 1919. They are in the shape of letters stolen from the files of a railway general manager:

STATE OF BUSYBODIES.  
Railway Regulation Commission,  
MEPHISTOPHELIA, Bb., January 21, 1919.

General Managers,

All Railroads under Jurisdiction of State of Busybodies.

Gentlemen: I would respectfully call your attention to the following legislation which has been enacted by the Commission, which is retro-active, being made effective January 1, 1918. I also desire to inform you that it will be the duty of the Commission to exact the fullest penalty of the law for the violations of this Statute which have already been committed by your Company.

"Be it enacted, This the 1st day of January, A. D. 1919, by the Railway Regulation Commission of the State of Busybodies, in conference assembled,

"Whereas, Certain devout and well meaning busybodies have in good faith represented that certain railways are wantonly abusing and otherwise tampering with God's pure air by compressing, storing and otherwise manipulating such air in the compressors, reservoirs, cylinders and pipes of air brake systems—

"Wherefore be it enacted, That on and after the 1st day of January, 1918, all railways subject to the jurisdiction of this State shall discontinue the use of all and every brake systems involving the use of air in a compressed, confined, rarefied or otherwise unnatural form, and shall equip all engines, cars and trains with the 'No-Slip Patent Automatic Shoestring Brake' recently patented by the Chairman of this Commission.

"Wherefore be it further enacted, That the penalty for the violation of this Statute shall be \$1,000 for each and every day on which each and every car not conforming to this statute shall be operated. Such penalty to be collected for and in the name of the Retrogressive Campaign Fund of the State of Busybodies."

I am, gentlemen, your very obedient servant,

X. BROWN,  
Chairman.

STATE OF BUSYBODIES.  
Department of Public Health,  
MEPHISTOPHELIA, Bb., January 20, 1919.

General Manager,

O. & D. T. RR.; Darktown, Bb.

Dear Sir: It having been represented to this Department that the explosion of certain of the torpedoes in use upon your railroad produces certain vapors said to be deleterious to the cultivation of Jamaican Radishes, I would therefore request that within ten days you will furnish me with complete information upon the following subjects:

- (1.) What type of torpedoes do you use? (Give detailed chemical analysis and photograph of each.)
- (2.) How many torpedoes do you furnish to each flagman? (Differentiate between passenger, freight and work.)
- (3.) How many flagmen do you employ? (Differentiate between passenger, freight and work.)
- (4.) How many flagmen do you estimate you will employ ten years hence?
- (5.) Have you any age limit for flagmen? (State if minors are employed.)
- (6.) Are flagmen instructed in train rules before being appointed? (Make special reference to any rules regarding the use of torpedoes.)
- (7.) Have any tests been made of exploding torpedoes close to the nose, in order to detect any gases which may emanate from them?
- (8.) Have you any laboratory for the chemical determination of gases? (If so, give photograph of same and also of chemist and his assistants.)
- (9.) Have you studied the culture of Jamaican Radishes and the probable effects upon same which might result from the continued operation of your railroad?

Your replies should be as complete and as concise as possible as it will probably be necessary to introduce several measures before the forthcoming session of the legislature upon this subject.

Yours respectfully,

Y. JONES,  
Chief Surgeon.

STATE OF BUSYBODIES.  
Railway Regulation Commission,  
MEPHISTOPHELIA, Bb., January 21, 1919.

General Manager,

O. & D. T. RR.; Darktown, Bb.

Dear Sir: I shall esteem it a favor if you will kindly forward me transportation for myself, wife and seven friends who will travel as servants, from this city to Utopia and return, good for ninety days.

You are of course aware that the laws of this State prohibit the issuance of any free transportation whatsoever, and it will therefore be necessary for you to send me regular tickets, crediting the tariff charges for same to passenger revenue in order that operating revenues may duly reflect the value of such tickets. The expense should be disposed of through your operating expense accounts under General Expenses Account "Relief Department Expenses."

It might be well to have this transportation forwarded before the vote is taken in the recently introduced measure to limit the salaries of railway officials, but this, of course, is purely a matter of suggestion.

I am, dear sir, yours very truly,

A. GARTER.

STATE OF BUSYBODIES.  
Office of the Attorney General,  
MEPHISTOPHELIA, Bb., January 19, 1919.

General Manager,

O. & D. T. RR.; Darktown, Bb.

Dear Sir: Complaint has been filed in my office by Mr. D. Foole of this city, in which the following serious allegations are made against your Company, to wit:

That on the nineteenth day of December, A. D. nineteen eighteen the Oppressed & Downtrodden Railroad did sell to the said Mr. D. Foole for the sum of two and one-quarter cents United States currency, at its duly and legally appointed ticket office in the township of Desert, a certain and sundry passenger ticket to be used for travel by the said Mr. D. Foole or his assigns from Desert to Drearyville. And that upon the back of said passenger ticket, embodied in the regulations for the use thereof, the word "the" appeared misprinted "The," thereby causing complainant much mental annoyance and perturbation.

Section 641 of the Act to Regulate Railroad Corporations, 1917, provides as follows: "Railways shall be held responsible for the safety and comfort of passengers whilst on their trains, stations or other property, and any railroad company causing unnecessary annoyance to any passenger or passengers shall be guilty of misdemeanor."

It would therefore seem clear that your Company acted illegally in this matter, and before taking such steps as may seem proper to enforce the above-quoted statute I am writing you as a mere matter of form to enquire whether you wish to enter any defense, although you will of course be aware that such could only result in increasing the costs to be assessed against your Company.

I am, dear sir, your obedient servant,

Z. SMITH.

**THE SOUTH MANCHURIA RAILWAY'S NEW HOTEL.**—The South Manchuria has recently opened to the public its new Tamato Hotel at Dalny. The hotel, which is said to be one of the finest in the Far East, was built by the railway at a cost of \$480,000. It is four stories high and has 88 rooms, 53 of which are with bath. It is doubtful, however, if the hotel will pay for some years.



# General News Department

The Canadian Northern has opened its passenger line between Toronto and Ottawa and has made a contract for the use of tracks in the Grand Trunk station in Ottawa.

The Western Maryland, in connection with the Pittsburgh & Lake Erie and the Lake Shore & Michigan Southern, has put on a through mail car to run between Baltimore and Chicago. The passenger traffic over this line is increasing.

The Delaware & Hudson has increased the pay of the 1,500 employees in the company's shop at Watervliet, N. Y., by from 1 cent to 4 cents an hour. All men who have received less than 32 cents an hour will receive an increase of 1½ cents.

The Nashville, Chattanooga & St. Louis has given annual passes, good throughout the lines of the company, to all train despatchers, agents, operators, enginemen, firemen, conductors, yardmasters, shop and roadway foremen, brakemen and clerks, who have been continuously in the service for fifteen years. Fully 1,000 men will receive this favor.

The House committee on interstate and foreign commerce reported to the House on Tuesday of this week the Stevens bill, conferring on the Interstate Commerce Commission extensive powers of regulation and investigation concerning block signals, steel cars, high power headlights, and, in general, all matters affecting safety. Mr. Stevens' bill, as introduced, May 27, was summarized in the *Railway Age Gazette*, June 12, page 1342.

The Railway Business Association calls attention to the fact that a million-dollar error was made in transmitting the Moon bill, regulating postal expenditures, from the House to the Senate. In the Senate print the maximum rate for a 60-foot car has been altered to "not exceeding 20 cents a mile," while the bill as it passed the House reads 21 cents. If the bill passes the Senate at the 20-cent rate it will mean for the railroads a loss of \$1,000,000 a year, as compared with the income at 21 cents.

The headings of the Snoqualmie tunnel, which the Chicago, Milwaukee & St. Paul is driving through the Cascade mountains, about 60 miles east of Seattle, met on August 4. The lines checked within 0.15 ft., the elevations checked within 0.13 ft., and the actual distance through the tunnel checked that measured over the summit within 6 ft. While this latter error might be considered large, it is not excessive in view of the fact that no special effort was made to secure refinements in measuring the surface line and there was from 12 to 14 ft. of snow over the summit at each time the line was measured. The construction of this tunnel was described in detail in the *Railway Age Gazette* of May 29.

## A Big Opportunity to Correct a Big Mistake

John M. Glenn, secretary of the Illinois Manufacturers' Association, is sending out the following circular letter:

"Many members of the Illinois Manufacturers' Association are writing letters to their senators and to representatives in the lower house urging the adoption of a joint resolution directing the Interstate Commerce Commission to review and revise its decision in the recent application of the eastern railroads for a 5 per cent advance in freight rates.

"It is contended that our financial situation is under a severe pressure because it is threatened by the unloading of railroad securities held by Europe and that the break is only temporarily halted by the close of the public markets. It is claimed that the small advance which the Interstate Commerce Commission has given the carriers will have no effect in restoring and establishing the confidence of the large investor and the holders of American securities abroad, which it is maintained will be sent over as soon as it is possible to do so to draw our gold or its equivalent.

"The Interstate Commerce Commission will have a big opportunity to take a big view of a big question if Congress will take the action requested; and it will take it if enough people appeal to it to act."

## New York to Boston by "Continuous Trolley"

This is the announcement which has been made in connection with the running of a street car through from Boston to New York and back last week; though on the return trip the experimental excursionists went by a high-speed railway as far as New Rochelle, 17 miles east of New York. This trip was made to further a project of the Bay State Railway Company, to promote through travel between these cities, especially by pleasure-seekers. This proposal follows the recent completion of a line 30 miles long through a thinly settled country between Danielson, Conn., and Providence, R. I. Hitherto, the traveler wishing to go from New York to Boston by electric cars has had to go by way of Springfield and Worcester. The present line is through New London and Providence.

The party who made the initial trip went from New York to New Rochelle by the New York, Westchester & Boston. Thence to New Haven the trolley lines parallel the New York, New Haven & Hartford. From New Haven to New London the course is even nearer to the ocean, running between that railroad and the Sound. From New London the route is up the beautiful Thames River to Norwich; thence northeast up the Quinebaug river to Danielson, whence the line turns east and makes a bee line through the wilderness to Providence. From that city to Boston, the fifty-mile run is within smelling distance of salt water for the most part, through Taunton, Brockton and the famous Blue Hill district. The total distance traveled was about 280 miles each way, and two days was the schedule time for the trip. Leaving New York at 8:15 a. m. the car arrived at 7 o'clock in the evening at New London, where the passengers remained for the night.

Resuming the journey at 9 o'clock next morning, the car reached the post office in Boston before 6 o'clock that evening. The passengers were surprised at the beauty and fertility of the farms and great estates never seen or heard of by ordinary railroad travelers.

## Interchange Inspectors and Car Foremen's Association

The fourteenth annual convention of the Chief Interchange Car Inspectors and Car Foremen's Association was held in the Hotel Sinton, Cincinnati, Ohio, August 25-27. The meeting was presided over by F. C. Schultz, chief interchange inspector at Chicago and president of the association. The invocation was offered by Rev. Henry C. Martin of the St. Luke's Methodist Church, and the association was welcomed to the city by Mayor Spiegel. After the address of the president the secretary reported a cash balance of \$31.19 and a total membership of 422. The discussion of the M. C. B. rules of interchange constituted the work of the convention. The following is the list of exhibitors:

American Steel Foundries (Simplex Railway Appliance Company), Chicago.—Models of the Economy draft arm and Simplex coupler. Represented by W. C. Walsh and W. G. Wallace.

Acme Supply Company, Chicago.—Diaphragms, safety tread and Chanarch flooring. Represented by R. C. Munro.

Grip Nut Company, Chicago. Represented by B. C. Hooper and J. Roberts. Hale & Kilburn, Philadelphia, Pa.—All-steel car seats. Represented by J. K. Hoffman.

McCord & Co., Chicago.—McCord journal box. Represented by H. E. Creer.

Newkirk, W. P., Portsmouth, Ohio.—Newkirk's blue flag rail.

## International Association for the Prevention of Smoke

This association, consisting of smoke inspectors for the various cities and railroads, will hold its ninth annual convention at Grand Rapids, Mich., on September 9, 10 and 11. The program includes an illustrated lecture on "Cinder Production and Cinder Catchers," by C. H. Bromley of New York; an address and discussion on "Railroad Smoke Elimination," by Charles W. Corning, secretary of the Chicago Railroad Smoke Inspectors' Association; an illustrated lecture on "The Effect of the Smoke Nuisance on Health, Building Materials, Vegetation, Weather, Etc.," by John O'Connor, Jr., of the University of Pittsburgh;

an address on "Smoke and Its Commercial Relations to Boilers and Stokers," by Lloyd R. Strong of St. Louis, and an address on "Gas Analysis as an Aid to Smoke Elimination," by Joseph W. Hays of Chicago, Ill.

## MEETINGS AND CONVENTIONS

*The following list gives names of secretaries, dates of next or regular meetings, and places of meeting.*

- AIR BRAKE ASSOCIATION.—F. M. Nellis, 53 State St., Boston, Mass. Next convention, May 4-7, 1915, Hotel Sherman, Chicago.
- AMERICAN ASSOCIATION OF DEMURRAGE OFFICERS.—A. G. Thomason, Demurrage Commissioner, Boston, Mass. Annual convention in April.
- AMERICAN ASSOCIATION OF DINING CAR SUPERINTENDENTS.—H. C. Boardman, D. L. & W., Hoboken, N. J. Next convention, October 22-24, Washington, D. C.
- AMERICAN ASSOCIATION OF FREIGHT AGENTS.—R. O. Wells, Illinois Central, East St. Louis, Ill. Annual meeting, May 21-24, 1915, Richmond, Va.
- AMERICAN ASSOCIATION OF GENERAL PASSENGER AND TICKET AGENTS.—W. C. Hope, C. R. R. of N. J., 143 Liberty St., New York. Annual meeting, September 15-16, Boston, Mass.
- AMERICAN ASSOCIATION OF RAILROAD SUPERINTENDENTS.—E. H. Harman, Room 101, Union Station, St. Louis, Mo. Next convention, August 20-21, New York.
- AMERICAN ELECTRIC RAILWAY ASSOCIATION.—E. B. Burritt, 29 W. 39th St., New York. Annual convention, October 12-16, Atlantic City, N. J.
- AMERICAN ELECTRIC RAILWAY MANUFACTURERS' ASSOCIATION.—H. G. McConaughy, 165 Broadway, New York. Meetings with American Electric Railway Association.
- AMERICAN RAILWAY ASSOCIATION.—W. F. Allen, 75 Church St., New York. Semi-annual meeting, November 18, Chicago.
- AMERICAN RAILWAY BRIDGE AND BUILDING ASSOCIATION.—C. A. Lichty, C. & N. W., Chicago. Next convention, October 20-22, 1914, Los Angeles, Cal.
- AMERICAN RAILWAY ENGINEERING ASSOCIATION.—E. H. Fritch, 900 S. Michigan Ave., Chicago. Next convention, March 16-18, 1915, Chicago.
- AMERICAN RAILWAY MASTER MECHANICS' ASSOCIATION.—J. W. Taylor, 1112 Karpen Bldg., Chicago. Annual meeting, June, 1915.
- AMERICAN RAILWAY SAFETY ASSOCIATION.—L. F. Shedd, C. R. I. & P., Chicago. Next meeting, November, Chicago.
- AMERICAN RAILWAY TOOL FOREMEN'S ASSOCIATION.—A. R. Davis, Central of Georgia, Macon, Ga. Annual meeting, July, 1915.
- AMERICAN SOCIETY FOR TESTING MATERIALS.—Prof. E. Marburg, University of Pennsylvania, Philadelphia, Pa.
- AMERICAN SOCIETY OF CIVIL ENGINEERS.—Chas. W. Hunt, 220 W. 57th St., New York. Regular meetings, 1st and 3d Wednesday in month, except June, July and August, 220 W. 57th St., New York.
- AMERICAN SOCIETY OF ENGINEERING CONTRACTORS.—J. R. Wemlinger, 11 Broadway, New York. Regular meetings, 2d Thursday in month, at 2 P. M., 11 Broadway, New York.
- AMERICAN SOCIETY OF MECHANICAL ENGINEERS.—Calvin W. Rice, 29 W. 39th St., New York. Annual meeting, December 1-4, 1914, New York.
- AMERICAN WOOD PRESERVERS' ASSOCIATION.—F. J. Angier, B. & O., Mt. Royal Sta., Baltimore, Md. Next convention, January 19-21, 1915, Chicago.
- ASSOCIATION OF AMERICAN RAILWAY ACCOUNTING OFFICERS.—E. R. Woodson, 1300 Pennsylvania Ave., N. W., Washington, D. C. Annual convention, April 28, 1915, Atlanta, Ga.
- ASSOCIATION OF MANUFACTURERS OF CHILLED CAR WHEELS.—George W. Lyndon, 1214 McCormick Bldg., Chicago. Annual meeting, second Tuesday in October, New York.
- ASSOCIATION OF RAILWAY CLAIM AGENTS.—C. W. Egan, B. & O., Baltimore, Md. Annual meeting, 3rd week in May, 1915, Galveston, Tex.
- ASSOCIATION OF RAILWAY ELECTRICAL ENGINEERS.—Jos. A. Andreucetti, C. & N. W., Room 411, C. & N. W. Sta., Chicago. Annual convention, October 26-30, 1914, Chicago.
- ASSOCIATION OF RAILWAY TELEGRAPH SUPERINTENDENTS.—P. W. Drew, Soo Line, 112 West Adams St., Chicago. Annual meeting, June 22-25, Rochester, N. Y.
- ASSOCIATION OF TRANSPORTATION AND CAR ACCOUNTING OFFICERS.—G. P. Conard, 75 Church St., New York. Next meeting, December 8-9, 1914, Richmond, Va.
- BRIDGE AND BUILDING SUPPLY MEN'S ASSOCIATION.—L. D. Mitchell, Detroit Graphite Co., Chicago, Ill. Meetings with American Railway Bridge and Building Association.
- CANADIAN RAILWAY CLUB.—James Powell, Grand Trunk, P. O. Box 7, St. Lambert (near Montreal), Que. Regular meetings, 2d Tuesday in month, except June, July and August, Windsor Hotel, Montreal, Que.
- CANADIAN SOCIETY OF CIVIL ENGINEERS.—Clement H. McLeod, 176 Mansfield St., Montreal, Que. Regular meetings, 1st Thursday in October, November, December, February, March and April. Annual meeting, January, Montreal.
- CAR FOREMEN'S ASSOCIATION OF CHICAGO.—Aaron Kline, 841 Lawler Ave., Chicago. Regular meetings, 2d Monday in month, except July and August, Lytton Bldg., Chicago.
- CENTRAL RAILWAY CLUB.—H. D. Vought, 95 Liberty St., New York. Regular meetings, 2d Friday in January, May, September and November. Annual meeting, 2d Thursday in March, Hotel Statler, Buffalo, N. Y.
- CIVIL ENGINEERS' SOCIETY OF ST. PAUL.—Edw. J. Dugan, P. O. Box 654, August and September, Old State Capitol Bldg., St. Paul.
- ENGINEERS' SOCIETY OF PENNSYLVANIA.—Edw. R. Dasher, Box 75, Harrisburg, Pa. Regular meetings, 1st Friday after 10th of each month, except July and August, 31 So. Front St., Harrisburg, Pa.
- ENGINEERS' SOCIETY OF WESTERN PENNSYLVANIA.—Elmer K. Hiles, 2511 Oliver Bldg., Pittsburgh, Pa. Regular meetings, 1st and 3d Tuesday, Pittsburgh.
- FREIGHT CLAIM ASSOCIATION.—Warren P. Taylor, R. F. & P., Richmond, Va. Annual meeting, June 16, 1915, Chicago.
- GENERAL SUPERINTENDENTS' ASSOCIATION OF CHICAGO.—A. M. Hunter, 321 Grand Central Station, Chicago. Regular meetings, Wednesday preceding 3d Thursday in month, Room 1856, Transportation Bldg., Chicago.
- INTERNATIONAL RAILWAY CONGRESS.—Executive Committee, 11, Rue de Louvain, Brussels, Belgium. Next convention, June 23 to July 6, 1915, Berlin.
- INTERNATIONAL RAILWAY FUEL ASSOCIATION.—C. G. Hall, C. & E. I., 922 McCormick Bldg., Chicago. Annual meeting, May 17-20, 1915, Chicago.
- INTERNATIONAL RAILWAY GENERAL FOREMEN'S ASSOCIATION.—Wm. Hall, 829 W. Broadway, Winona, Minn. Next convention, July 14-17, 1915, Sherman House, Chicago.
- INTERNATIONAL RAILROAD MASTER BLACKSMITHS' ASSOCIATION.—A. L. Woodworth, C. H. & D., Lima, Ohio.
- MAINTENANCE OF WAY AND MASTER PAINTERS' ASSOCIATION OF THE UNITED STATES AND CANADA.—T. I. Goodwin, C. R. I. & P., Eldon, Mo. Next convention, November 17-19, 1914, Detroit, Mich.
- MASTER BOILER MAKERS' ASSOCIATION.—Harry D. Vought, 95 Liberty St., New York. Annual convention, May, 1915.
- MASTER CAR AND LOCOMOTIVE PAINTERS' ASSOCIATION OF THE UNITED STATES AND CANADA.—A. P. Dane, B. & M., Reading, Mass. Next convention, September 8-11, Nashville, Tenn.
- MASTER CAR BUILDERS' ASSOCIATION.—J. W. Taylor, 1112 Karpen Bldg., Chicago. Annual meeting, June, 1915.
- NATIONAL RAILWAY APPLIANCE ASSOCIATION.—Bruce V. Crandall, 537 So. Dearborn St. Chicago. Next convention, March 15-19, 1915, Chicago.
- NEW ENGLAND RAILROAD CLUB.—W. E. Cade, Jr., 683 Atlantic Ave., Boston, Mass. Regular meetings, 2d Tuesday in month, except June, July, August and September, Boston.
- NEW YORK RAILROAD CLUB.—Harry D. Vought, 95 Liberty St., New York. Regular meetings, 3d Friday in month, except June, July and August, 29 W. 39th St., New York.
- NIAGARA FRONTIER CAR MEN'S ASSOCIATION.—E. Frankenberger, 623 Brisbane Bldg., Buffalo, N. Y. Meetings monthly.
- PEORIA ASSOCIATION OF RAILROAD OFFICERS.—M. W. Rotchford, Union Station, Peoria, Ill. Regular meetings, 2d Thursday in month, Jefferson Hotel, Peoria.
- RAILROAD CLUB OF KANSAS CITY.—C. Manlove, 1008 Walnut St., Kansas City, Mo. Regular meetings, 3d Friday in month, Kansas City.
- RAILROAD MASTER TINNERS, COPPERSMITHS AND PIPEFITTERS' ASSOCIATION.—U. G. Thompson, C. & E. I., Danville, Ill. Annual meeting, May, 1915.
- RAILWAY BUSINESS ASSOCIATION.—Frank W. Noxon, 30 Church St., New York. Annual meeting, December 10, 1914, Waldorf-Astoria Hotel, New York.
- RAILWAY CLUB OF PITTSBURGH.—J. B. Anderson, Room 207, P. R. R. Sta., Pittsburgh, Pa. Regular meetings, 4th Friday in month, except June, July and August, Monongahela House, Pittsburgh.
- RAILWAY ELECTRICAL SUPPLY MANUFACTURERS' ASSOCIATION.—J. Scribner, 1021 Monadnock Block, Chicago. Meetings with Association of Railway Electrical Engineers.
- RAILWAY FIRE PROTECTION ASSOCIATION.—C. B. Edwards, Fire Ins. Agt., Mobile & Ohio, Mobile, Ala. Annual meeting, October 6, 1914, Washington, D. C.
- RAILWAY SIGNAL ASSOCIATION.—C. C. Rosenberg, Times Bldg., Bethlehem, Pa. Annual meeting, September 22-24, 1914, Bluff Point, N. Y.
- RAILWAY STOREKEEPERS' ASSOCIATION.—J. P. Murphy, L. S. & M. S., Box C, Collinwood, Ohio. Annual meeting, May, 1915.
- RAILWAY SUPPLY MANUFACTURERS' ASSOCIATION.—J. D. Conway, 2136 Oliver Bldg., Pittsburgh, Pa. Meetings with M. C. B. and M. M. Associations.
- RAILWAY TELEGRAPH AND TELEPHONE APPLIANCE ASSOCIATION.—G. A. Nelson, 50 Church St., New York. Meetings with Association of Railway Telegraph Superintendents.
- RICHMOND RAILROAD CLUB.—F. O. Robinson, C. & O., Richmond, Va. Regular meetings, 2d Monday in month, except June, July and August.
- ROADMASTERS' AND MAINTENANCE OF WAY ASSOCIATION.—L. C. Ryan, C. & N. W., Sterling, Ill. Next convention, September 8-10, 1914, Chicago.
- ST. LOUIS RAILWAY CLUB.—B. W. Frauenthal, Union Station, St. Louis, Mo. Regular meetings, 2d Friday in month, except June, July and August, St. Louis.
- SALT LAKE CITY TRANSPORTATION CLUB.—R. E. Rowland, Hotel Utah Bldg., Salt Lake City, Utah. Regular meetings, 1st Saturday of each month, Salt Lake City.
- SIGNAL APPLIANCE ASSOCIATION.—F. W. Edmunds, 3868 Park Ave., New York. Meeting with annual convention Railway Signal Association.
- SOCIETY OF RAILWAY FINANCIAL OFFICERS.—Carl Nyquist, C. R. I. & P., La Salle St. Sta., Chicago. Annual meeting, September 15-17, Hotel Aspinwall, Lenox, Mass.
- SOUTHERN ASSOCIATION OF CAR SERVICE OFFICERS.—E. W. Sandwich, A. & W. P. Ry., Atlanta, Ga.
- SOUTHERN AND SOUTHWESTERN RAILWAY CLUB.—A. J. Merrill, Grant Bldg., Atlanta, Ga. Regular meetings, 3d Thursday, January, March, May, July, September, November, 10 A. M., Candler Bldg., Atlanta.
- TOLEDO TRANSPORTATION CLUB.—J. S. Marks, Agent, Interstate Despatch, Toledo, Ohio. Regular meetings, 1st Saturday in month, Boody House, Toledo.
- TRACK SUPPLY ASSOCIATION.—W. C. Kidd, Ramapo Iron Works, Hillsburn, N. Y. Meetings with Roadmasters' and Maintenance of Way Association.
- TRAFFIC CLUB OF CHICAGO.—W. H. Wharton, La Salle Hotel, Chicago.
- TRAFFIC CLUB OF NEW YORK.—C. A. Swope, 291 Broadway, New York. Regular meetings, last Tuesday in month, except June, July and August, Waldorf-Astoria, New York.
- TRAFFIC CLUB OF PITTSBURGH.—D. L. Wells, Erie R. R., Pittsburgh, Pa. Meetings bimonthly, Pittsburgh. Annual meeting, 2d Monday in June.
- TRAFFIC CLUB OF ST. LOUIS.—A. F. Versen, Mercantile Library Bldg., St. Louis, Mo. Annual meeting in November. Noonday meetings October to May.
- TRAIN DESPATCHERS' ASSOCIATION OF AMERICA.—J. F. Mackie, 7122 Stewart Ave., Chicago. Annual meeting June 15, 1915, Minneapolis, Minn.
- TRANSPORTATION CLUB OF DETROIT.—W. R. Hurley, Superintendent's office, L. S. & M. S., Detroit, Mich. Meetings monthly, Normandie Hotel, Detroit.
- TRAVELING ENGINEERS' ASSOCIATION.—W. O. Thompson, N. Y. C. & H. R., East Buffalo, N. Y. Next meeting, September 15-18, Hotel Sherman, Chicago.
- UTAH SOCIETY OF ENGINEERS.—Frank W. Moore, Newhouse Bldg., Salt Lake City, Utah. Regular meetings, 3d Friday in month, except July and August, Consolidated Music Hall, Salt Lake City.
- WESTERN CANADA RAILWAY CLUB.—W. H. Rosevear, P. O. Box 1707, Winnipeg, Man. Regular meetings, 2d Monday, except June, July and August, Winnipeg.
- WESTERN RAILWAY CLUB.—J. W. Taylor, 1112 Karpen Bldg., Chicago. Regular meetings, 3d Tuesday in month, except June, July and August, Karpen Bldg., Chicago.
- WESTERN SOCIETY OF ENGINEERS.—J. H. Warder, 1735 Monadnock Block, Chicago. Regular meetings, 1st Monday in month, except January, July and August, Chicago. Extra meetings, except in July and August, generally on other Monday evenings.



## Traffic News

The House committee on interstate and foreign commerce has introduced in Congress a bill to provide for uniform freight classification throughout the United States.

The Canadian Pacific has announced that it will make a special rate of one cent a mile for farm laborers destined for the Saskatchewan farms to take care of this year's large harvest. It is also announced that those unable to pay will be transported by the railway company free.

In reply to various rumors that the Panama-Pacific Exposition to be held next year at San Francisco might be postponed on account of the European war, Charles B. Moore, president of the organization, has announced that the exposition will positively open on the scheduled date, February 20, 1915, and that the work is more than 90 per cent completed.

The railways in Western Trunk Line, trans-Missouri and Southwestern territories have announced that at the end of September all arrangements for concentration of butter and eggs and other dairy products, also live and dressed poultry, will be discontinued, except at the assessment of the full classification rate into the concentration point and the full tariff rate therefrom.

Senator Thomas introduced in Congress on Monday last a resolution calling on the Interstate Commerce Commission to inquire into an order which has been issued by the Union Pacific, to the effect that after the end of September it will not accept through tickets held by passengers from the east arriving at Salt Lake and Ogden, destined to points in the Pacific northwest.

The Southern Railway is to make displays this year at three big expositions and thirty-six district and county fairs throughout the north and west. Southern farm products will be shown in

The Texas Tariff Bureau has prepared and expects to issue within a few days a circular including tables showing the short line mileage by various routes between all Texas junction points. This will be a great convenience, both to the railways and to the shippers, as under many of the railroad-commission tariffs rates are made by using the shortest mileage by any practicable route.

Governor Colquitt of Texas has authorized the state railroad commission to employ N. A. Stedman of Ogden, and S. H. Cowan of Ft. Worth, as attorneys to represent the commission in the interrogation of witnesses and development of facts in the hearing to be held by the railroad commission in response to the petition of the railroads for a general advance in freight rates. The governor is said to have told the railroad commissioners that he believed the railroads were entitled to have some of their rates advanced, as he considered a few of them too low. The governor said that the roads had been heavily hit by the flood, decreases in traffic and earnings, and that they are entitled to a readjustment, although he did not believe the rates on cotton or on some other staple articles should be changed.

The Missouri railways are preparing statistical evidence to be presented before the Missouri Public Service Commission on September 15 in support of an application for advances in both freight and passenger rates. This action is being taken in accordance with the decision recently rendered by the Missouri Supreme Court in the Missouri Southern case, holding that the power of the commission to prescribe just and reasonable rates is not limited by the maximum freight and passenger rate laws, which preceded the law creating the commission, and that therefore the commission may consider evidence bearing on the reasonableness of rates exceeding the statutory rates. The roads are compiling passenger fares on a basis of about three cents a mile.

### Car Location

The accompanying table which was taken from bulletin No. 20 of the American Railway Association, gives a summary of freight car location by groups on July 1, 1914:

CAR LOCATION ON JULY 1, 1914												
	New England.	N.Y., N.J., Del., Md., Eastern Pa.	Ohio, Ind., Mich., Western Pa.	Va., W. Va., No. & So. Carolina.	Ky., Tenn., Miss., Ga., Fla.	Iowa, Ill., Wis., Minn.	Mont., Wyo., Neb., Dakotas.	Kans., Colo., Okla., Mo., Ark.	Texas, La., New Mexico.	Oregon, Idaho, Nev., Cal., Ariz.	Canadian Lines.	Grand Total.
Total Cars Owned.....	87,905	687,548	264,223	207,827	177,420	495,292	22,333	155,761	28,845	143,150	154,327	2,424,631
Home Cars on Home Roads.....	54,572	485,065	124,009	140,869	115,710	272,957	12,801	108,042	15,941	91,291	111,821	1,633,078
Home Cars on Foreign Roads.....	33,333	202,483	140,214	66,958	61,710	122,335	9,532	47,719	12,904	51,859	42,506	791,553
Foreign Cars on Home Roads.....	40,515	205,460	161,503	59,531	43,284	127,579	10,496	50,820	20,515	49,449	26,669	795,821
Total Cars on Line.....	95,087	690,525	285,512	200,400	158,994	500,536	23,297	158,862	36,456	140,740	138,490	2,428,899
Excess or Deficiency.....	7,182	2,977	21,289	*7,427	*18,426	5,244	964	3,101	7,611	*2,410	*15,837	4,268
Surplus.....	2,521	30,752	52,751	16,636	13,745	29,678	5,592	19,784	2,152	28,590	18,674	220,875
Shortage.....	153	33	238	17	293	195	0	360	22	22	0	1,333
Shop Cars—												
Home Cars in Home Shops.....	8,089	60,745	23,342	20,795	18,832	35,050	808	15,332	3,283	7,052	6,528	199,856
Foreign Cars in Home Shops.....	1,050	5,237	4,726	1,457	1,255	3,476	500	1,418	904	2,621	140	22,784
Total Cars in Shop.....	9,139	65,982	28,068	22,252	20,087	39,664	1,308	16,750	4,187	9,673	6,668	223,778
Per Cent. to Total Cars Owned—												
Home Cars on Home Roads.....	62.08	70.55	46.93	67.78	65.22	75.30	57.32	69.36	55.26	63.77	72.46	67.35
Total Cars on Line.....	105.41	100.43	108.06	96.43	89.66	101.06	104.32	100.92	126.38	98.32	89.74	100.02
Home Cars in Home Shops.....	9.20	8.84	8.83	10.01	10.61	7.08	3.62	9.84	11.38	4.93	4.23	8.24
Foreign Cars in Home Shops.....	.83	.76	1.79	.70	.71	.70	2.24	.85	3.13	1.83	.09	.92
Total Cars in Shops.....	10.03	9.60	10.62	10.71	11.32	8.01	5.86	10.69	14.51	6.76	4.32	9.21

\*Denotes deficiency.

great profusion. There will be four circuits of exhibits taking in county and district fairs in Iowa, Minnesota, Wisconsin, Illinois, Indiana, Michigan, New York, Pennsylvania and Connecticut, while special displays on a more elaborate scale will be made at the great Canadian National Exposition at Toronto, Canada, and at other expositions.

Following the recent action of the Chicago & North Western, the Chicago railways have given notice that at the end of September they will discontinue absorbing tunnel and lighterage charges in Chicago. This means the cancellation of tariffs with the Merchants' Lighterage Company, the Chicago Lighterage Company, and the Chicago Warehouse & Terminal Company. The Chicago Association of Commerce last week filed a petition with the Interstate Commerce Commission and the Illinois Public Utilities Commission asking the suspension of the North Western's cancellation.

### Advances in Passenger Fares Proposed

Railways in Central Passenger Association and Trunk Line territories are working on plans for advancing interstate passenger fares, in accordance with the suggestions made by the Interstate Commerce Commission in the eastern rate advance case. While the interstate rates in these territories have not been reduced to the two-cents-a-mile basis which prevails for intrastate traffic in Illinois, Indiana, Ohio and the southern peninsula of Michigan, the interstate fares have been influenced by the low state rates, although on May 1 many of the interstate basing fares were placed on a 2½-cent basis. It is now proposed to advance interstate fares to approximately 2½ cents wherever possible, which would involve increases in many of the long-distance through fares such as that between Chicago and New York. It is also proposed to equalize rates between points which now take different rates in opposite directions. Rate

clerks have been meeting in Chicago to figure the possibilities of a readjustment, and a joint meeting of the rate clerks of the Trunk Line and Central Passenger Associations was called for Wednesday of this week at Niagara Falls. The Western Passenger Association roads have also discussed plans for advancing interstate fares. Passenger officers of the Southwestern lines called a meeting, to be held on Tuesday at St. Louis, to discuss the situation created by the Interstate Commerce Commission's decision in the Oklahoma, Arkansas and Missouri case, upholding the three-cent interstate fare. The St. Louis Southwestern had reduced the interstate rate to two cents. The roads are confronted with the problem of dealing with passengers who buy tickets at the state lines in order to get the advantage of the lower rate, a practice that has attained large proportions because the Oklahoma commission has ordered the roads to hold trains

at stations near the state line and has prohibited a higher charge for fares paid on trains.

### Car Surpluses and Shortages

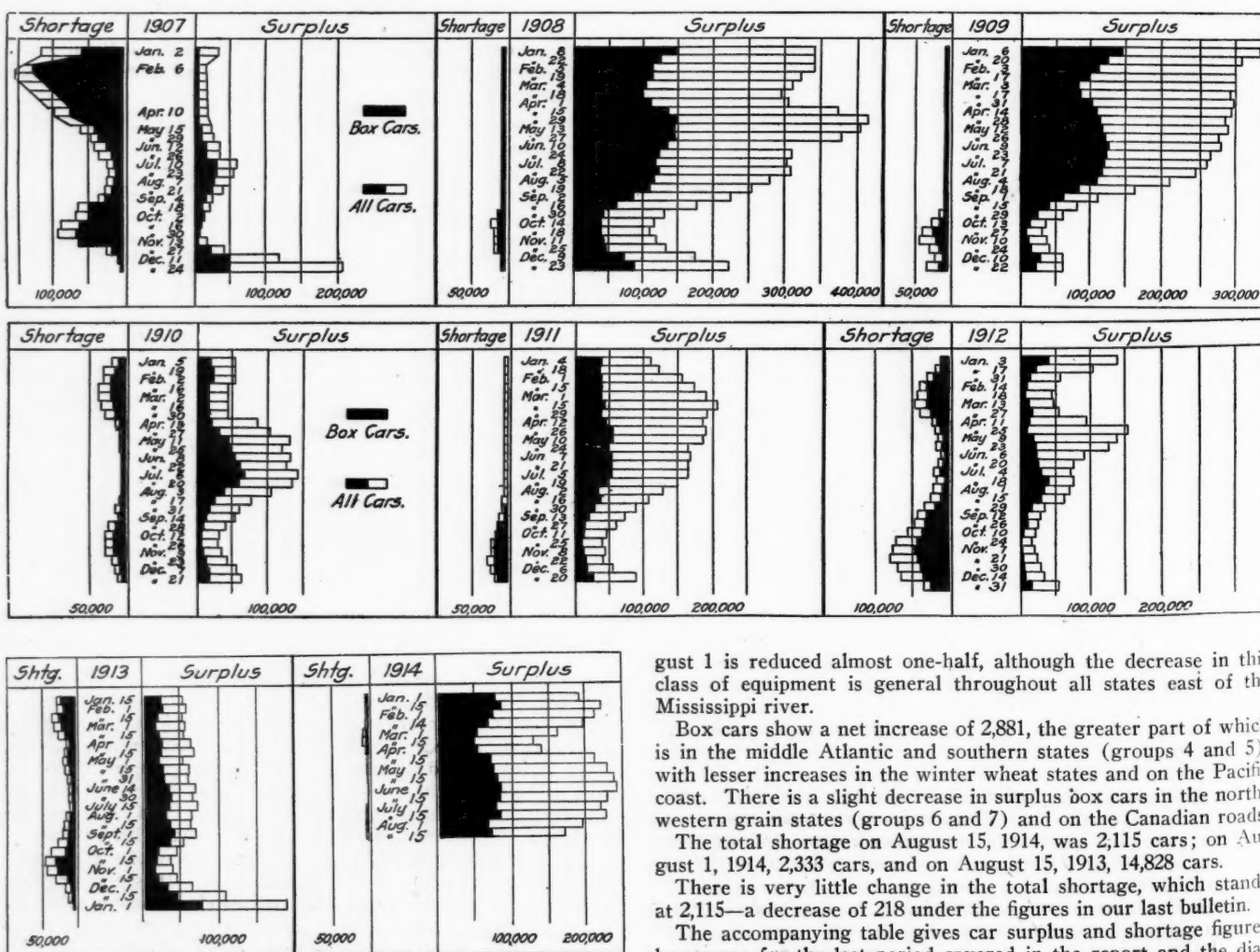
Arthur Hale, chairman of the committee on relations between railroads of the American Railway Association, in presenting statistical bulletin No. 173-A, giving a summary of car surpluses and shortages by groups from April 15, 1913, to August 15, 1914, says: The total surplus on August 15, 1914, was 174,260 cars; on August 1, 1914, 198,998 cars, and on August 15, 1913, 69,253 cars.

There is a further decrease of 24,738 cars in surplus, bringing the total down to 174,260.

The principal reduction in surplus is in coal and gondola cars in central freight association territory, where the surplus of Au-

CAR SURPLUSES AND SHORTAGES											
Date		No. of roads.	Surpluses				Shortages				
			Box.	Flat.	Coal, gondola and hopper.	Other kinds.	Total.	Box.	Flat.	Coal, gondola and hopper.	Other kinds.
Group *1.—	August 15, 1914.....	7	1,574	535	985	711	3,805	134	10	0	16
" 2.—	" 15, 1914.....	32	2,287	175	15,866	7,637	25,965	16	0	0	0
" 3.—	" 15, 1914.....	30	2,780	784	24,963	3,306	31,833	412	100	0	203
" 4.—	" 15, 1914.....	12	6,725	991	2,552	1,355	11,623	50	0	0	0
" 5.—	" 15, 1914.....	24	2,352	359	2,954	2,530	8,195	0	2	0	30
" 6.—	" 15, 1914.....	26	17,375	1,380	3,153	4,175	26,083	258	17	18	2
" 7.—	" 15, 1914.....	4	1,883	33	656	981	3,553	0	0	0	50
" 8.—	" 15, 1914.....	15	6,580	336	1,861	3,031	11,808	0	7	472	0
" 9.—	" 15, 1914.....	12	1,602	124	266	1,032	3,024	6	4	4	7
" 10.—	" 15, 1914.....	21	7,893	1,419	3,304	7,749	20,365	204	14	2	77
" 11.—	" 15, 1914.....	5	24,201	1,053	0	2,752	28,006	0	0	0	0
Total .....		188	75,272	7,189	56,560	35,259	174,260	1,080	154	496	385

\*Group 1 is composed of New England lines; Group 2—New York, New Jersey, Delaware, Maryland and Eastern Pennsylvania lines; Group 3—Ohio, Indiana, Michigan and Western Pennsylvania lines; Group 4—West Virginia, Virginia, North and South Carolina lines; Group 5—Kentucky, Tennessee, Mississippi, Alabama, Georgia and Florida lines; Group 6—Iowa, Illinois, Wisconsin and Minnesota lines; Group 7—Montana, Wyoming, Nebraska, North Dakota and South Dakota lines; Group 8—Kansas, Colorado, Missouri, Arkansas and Oklahoma lines; Group 9—Texas, Louisiana and New Mexico lines; Group 10—Washington, Oregon, Idaho, California, Nevada and Arizona lines; Group 11—Canadian lines.



Car Surpluses and Shortages, 1907 to 1914

gust 1 is reduced almost one-half, although the decrease in this class of equipment is general throughout all states east of the Mississippi river.

Box cars show a net increase of 2,881, the greater part of which is in the middle Atlantic and southern states (groups 4 and 5), with lesser increases in the winter wheat states and on the Pacific coast. There is a slight decrease in surplus box cars in the northwestern grain states (groups 6 and 7) and on the Canadian roads.

The total shortage on August 15, 1914, was 2,115 cars; on August 1, 1914, 2,333 cars, and on August 15, 1913, 14,828 cars.

There is very little change in the total shortage, which stands at 2,115—a decrease of 218 under the figures in our last bulletin.

The accompanying table gives car surplus and shortage figures by groups for the last period covered in the report and the diagram shows total bi-weekly surpluses and shortages 1907 to 1914.



## Commission and Court News

### INTERSTATE COMMERCE COMMISSION

#### California-Nevada Lumber Rates

##### *Opinion by Commissioner Hall:*

The commission, upon a re-argument of this case, the original report of which was given in 28 I. C. C., 313, re-affirms its former decision that the Southern Pacific should be required to cancel certain proposed advance rates on carload lumber from Newcastle, New England Mills, Colfax, and Gold Run, Cal., to Verdi and Reno, Nev., thus leaving in effect the present rates. (31 I. C. C., 464.)

#### Bills of Lading on Reconsigned Shipments

##### *Jung & Sons Company v. Louisville & Nashville. Opinion by the commission:*

The commission finds that defendants' practice of refusing to issue new bills of lading, concealing the names of the original shippers, in exchange for old bills of lading, in cases where cars are reconsigned at the terminals of their lines, is not unreasonable. (31 I. C. C., 455.)

#### Rates on Fertilizer from Norfolk, Va.

##### *F. S. Royster Guano Company v. Atlantic Coast Line et al. Opinion by the Commission:*

The commission finds that the rates charged by the Atlantic Coast Line and the Seaboard Air Line on fertilizers from Norfolk to certain points in North Carolina are unreasonable and discriminatory as compared with rates to the same points and to points equally distant from Wilmington, N. C. A new schedule of rates on commercial fertilizers in carloads from Norfolk to points in North Carolina is therefore prescribed, these rates being based on a distance scale varying from \$1.50 for 30 to 50 miles to \$3.25 for 325 to 350 miles, carload minimum 20,000 lb. (31 I. C. C., 458.)

#### The Tap Line Case

##### *Second supplemental report of the commission. Opinion by Commissioner Harlan.*

In accordance with the decision of the United States Supreme Court in the Tap Line Cases (234 U. S. 1), which held that the five tap lines appealing from the commission's findings in 23 I. C. C., 277, 549, were common carriers with respect both to proprietary and nonproprietary traffic and that the commission had exceeded its powers in preventing the divisions previously allowed them, the commission now restores all the through routes and joint rates which were in effect prior to May 1, 1912, between the trunk lines and the 57 tap lines involved in the instant case.

It is held, however, that the divisions out of the through rate on interstate shipments of lumber and forest products, from points on such of these tap lines as file tariffs and have otherwise complied with the commission's accounting rules, etc., should not exceed the following maximum amounts: For switching a distance of 1 mile or less from the junction, \$2 per car; over 1 mile and up to 3 miles from the junction, \$3 per car; on shipments from points over 3 miles and not more than 6 miles from the junction, 1½ cents per 100 lb.; over 6 miles and not more than 10 miles from the junction, 2 cents per 100 lb.; over 10 miles and not more than 20 miles from the junction, 2½ cents per 100 lb.; over 20 miles and not more than 30 miles from the junction, 3 cents per 100 lb.; over 30 miles and not more than 40 miles from the junction, 3½ cents per 100 lb.; over 40 miles from the junction, 4 cents per 100 lb. These divisions are the net amounts that may be paid out of the trunk line rates from the junctions, and when the rates from points on the tap line are made by the addition of an arbitrary, such arbitrary shall accrue to the tap line.

These divisions are to be applied to all interstate shipments of lumber and forest products that moved from points on the tap lines since May 1, 1912, and the tap line carriers are allowed reparation accordingly.

In case the delivery of lumber and forest products to a trunk

line involves a haul over two or more tap lines, the divisions herein fixed should be applied to the aggregate haul, and not to the separate service of each of the tap lines.

With respect to the milling-in-transit rate on logs as formerly practised on the tap lines, the commission adheres to its original conclusion that the rate on lumber at the junction or mill point may not lawfully be extended back to the point on the tap line where the logs originate, and that any division out of the through lumber rate on account of the log haul can not be sanctioned.

The commission reaffirms its conference ruling to the effect that it is its view "that the law does not prohibit the use of interstate free passes by such officials and employees who devote substantially all their time to the service of the tap line and where by the use of such free passes no unlawful discriminations are effected." (31 I. C. C. 490.)

#### Rates on Sugar from New Orleans

*In re sugar rates from New Orleans, La., and points taking same rates to Ohio river crossings, Memphis, Tenn., St. Louis, Mo., and intermediate points. Opinion by the commission:*

The carriers transporting sugar in carloads from New Orleans, La., and points taking the same rates to Ohio river crossings, Memphis, Tenn., St. Louis, Mo., and other Mississippi river points, and points intermediate thereto, have in effect many rates which violate the fourth section, and have filed applications asking to be allowed to continue these lower rates to the river points and certain various intermediate low rate points on the routes operating to the river crossings than are concurrently in effect on like traffic to intermediate stations. The commission follows its ruling in previous cases that "insofar as the Ohio river itself, by affording a means of transportation, gives to these cities upon its banks lower rates than would otherwise be obtainable, they should be accorded the benefit of their location." It does not agree, however, that the relief should be granted to the extent prayed by all the applicants. The Queen & Crescent constitutes the direct short line from New Orleans to Cincinnati, which is the most distant of the river crossings involved. The distance via this route is 836 miles. There are in effect blanket rates of 23 cents in carloads to all points on this line between Chattanooga and Cincinnati except to Lexington, which is accorded the Cincinnati rate; and these blanket rates are applied to a certain territory approximately 300 miles in length for distances ranging from 498 to 833 miles. These voluntary blanket rates to the non-competitive points bear a reasonable relation to the competitive rates which would warrant relief to the Queen & Crescent from the rule of the fourth section to the extent prayed to Cincinnati. The commission finds, therefore, that the Queen & Crescent route should be permitted to continue to charge lower rates on sugar from New Orleans to Cincinnati than are concurrently in effect to intermediate points between Chattanooga and Cincinnati, provided the present intermediate rates of 23 cents per 100 lb. in carloads and 28 cents for less than carloads are not exceeded.

It is also held that no justification has been shown by the other applicant carriers for the maintenance of higher rates to points south of the river crossings than the rates to the local points between Chattanooga and Cincinnati on the Queen & Crescent and similar findings are made to apply. Relief is granted to Lexington to the same extent as to Cincinnati.

The commission also finds that the Illinois Central should be allowed to charge lower rates to Memphis than to intermediate points, provided the rates to the latter do not exceed 20 cents per 100 lb. on carloads and 25 cents on less than carloads. The Yazoo & Mississippi Valley is allowed relief with reference to rates on sugar to river points on its line, provided the rates to intermediate points not on the river do not exceed 17 and 20 cents per 100 lb. on carload and less than carload lots respectively.

The commission holds that the Louisville & Nashville should be allowed to continue to charge lower rates on sugar from New Orleans to Nashville and Bowling Green than are concurrently in effect on like traffic to intermediate points, provided the rates to the said intermediate points do not exceed 23 cents per 100 lb. in carloads, and 28 cents in less than carloads.

That portion of the Louisville & Nashville's application to be allowed to increase its rate to Montgomery from 17 to 20 cents per 100 lb. is denied. With reference to the rates of the same carrier to Mobile relief is granted provided the rates to intermediate points do not exceed 15 cents per 100 lb. on carload and 20 cents on less than carload shipments.

The Queen & Crescent has proposed to increase its rates on

sugar from New Orleans to Chattanooga from 20 and 23 cents to 23 and 28 cents on carloads and less than carloads respectively in conformance with a decision in a previous case. It can be allowed, therefore, to charge higher rates to intermediate points.

Relief is denied with reference to the rates on sugar to such points as Tuscaloosa, Attalla, Holt, Akron and Birmingham.

The commission also holds that whatever local rate on sugar is made by the direct line from New Orleans to any interior point south of the rivers, must not be exceeded by any rate to any point intermediate thereto upon the direct line. Carriers having indirect routes to all points to which lower rates may be charged than to intermediate points will be authorized to meet the rates on sugar established over the direct route from New Orleans in those instances where the indirect route is not less than 15 per cent longer than the direct line between the same points, and to maintain higher rates on like traffic to points intermediate thereto, provided the rates to said intermediate points on the indirect routes do not exceed 15 and 20 cents for carloads and less than carloads respectively for distances not in excess of 200 miles, 17 and 22 cents for distances not exceeding 300 miles, 20 and 25 cents for distances not exceeding 400 miles, 23 and 28 cents for distances not exceeding 700 miles, and 25 and 30 cents for distances greater than 700 miles. (31 I. C. C., 495.)

### STATE COMMISSIONS

George A. Henshaw, of the Oklahoma Corporation Commission, has announced that application will probably be made by the commissions of Missouri, Arkansas and Oklahoma for a rehearing of the case before the Interstate Commerce Commission in which the commission decided last week that three cents a mile is not an unreasonable rate for interstate passenger travel in those states, in spite of the fact that the state rate is two cents a mile. Commissioner Henshaw says that such an application will be made by the Oklahoma commission even if the other states do not join.

Representatives of the state commissions of Idaho, Montana, Nevada, Utah, Arizona and Colorado, have called a meeting to be held in Denver on August 28, to prepare their cases for hearings which are to be held in Chicago on October 6, at which the Interstate Commerce Commission will consider a petition filed by the transcontinental railways asking for modifications of the federal commission's order in the intermountain rate case as to 107 commodities which meet heavy water competition on the Pacific coast, and on which the roads desire to charge rates at variance with a strict interpretation of the long and short haul clause without making similar reductions to interior points. It is said that the state commissions are planning to oppose this application of the roads.

The Railroad Commission of Texas has announced that it has decided to accord the railroads of the State a hearing on their application, presented on January 26, asking for a horizontal advance of 15 per cent in freight rates in the state. At the time the application was presented the commission declined to give a hearing on the petition, saying that it had no merit. As reported in last week's issue, the railroads recently held a meeting at which it was decided to make further efforts to obtain an advance in rates. This was followed by the commission's announcement that it would give a hearing. The plan recently considered by the railroads has not, however, contemplated a horizontal general advance in rates, such as was proposed in January, but a general readjustment of rates, which would advance a large number. No date has yet been set for the hearing, but Commissioner Williams has suggested that before this is decided upon an agreement should be had if possible with the principal carriers for the preparation of statistical evidence from their records for investigations along certain lines preceding the hearing.

### PERSONNEL OF COMMISSIONS

John W. Flintham has been appointed secretary of the new Colorado Public Utilities Commission, with office at Denver, Colo.

W. A. Mitchell of Sedalia, Mo., has been appointed an inspector of car equipment, Division of Valuation, Interstate Commerce Commission.

## Railway Officers

### Executive, Financial, Legal and Accounting

W. O. Wall has been appointed general claim agent of the Georgia & Florida, with office at Augusta, Ga., and the office of freight claim agent has been discontinued.

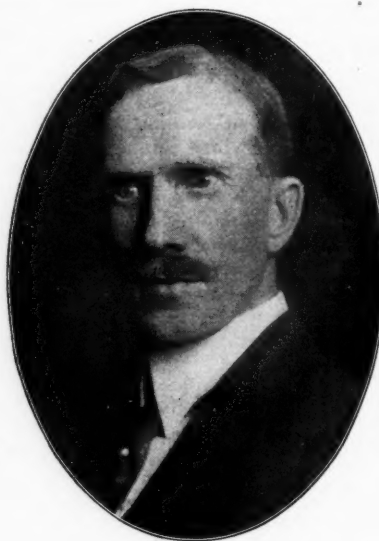
T. V. Pomar, auditor of the Florida East Coast, at St. Augustine, Fla., has been appointed general auditor and assistant treasurer, with headquarters at St. Augustine.

E. B. Pierce, having resigned as auditor of the Missouri, Kansas & Texas on account of ill health, all communications heretofore forwarded to him should be addressed to the controller until further notice.

W. F. Ingram, assistant auditor of the Southern Pacific, at San Francisco, Cal., has been appointed assistant treasurer, with headquarters at San Francisco, succeeding H. A. Jones, resigned on account of failing health, and the position of assistant auditor is abolished.

William C. Tomkins, whose appointment as assistant to vice-president of the Grand Trunk, and the Grand Trunk Pacific, with headquarters at Montreal, Que., has already been an-

nounced in these columns, entered the service of the Grand Trunk on September 1, 1885, in the office of the auditor of pay rolls. Two years later he was transferred to the office of the general manager, and subsequently served in the president's office of the same road. In May, 1908, he became secretary to the late Martin M. Reynolds, vice-president in charge of finance and accounting of the Grand Trunk and the Grand Trunk Pacific, with headquarters at Montreal. Mr. Tomkins remained in that position until the death of Mr. Reynolds, which occurred on June 17, of



W. C. Tomkins

this year. On August 1 Mr. Tomkins was appointed assistant to vice-president of the same roads as above noted.

Thornwell Fay has been appointed assistant to the receivers of the International & Great Northern, with jurisdiction over all departments of the receivership, with headquarters at Houston, Tex. A. G. Whittington has been appointed general manager for the receivers, with jurisdiction over the operating, mechanical and maintenance departments, with headquarters at Houston. He has been second vice-president and general manager.

### Operating

D. E. Nichols has been appointed trainmaster of the Minnesota division of the Northern Pacific at Staples, Minn.

H. E. Allen, until recently superintendent of the Trinity & Brazos Valley at Teague, Tex., has been appointed superintendent of the Louisiana division of the Chicago, Rock Island & Pacific, with headquarters at Eldorado, Ark., succeeding A. E. Walker, who has been appointed superintendent of the Arkansas division, with office at Little Rock, Ark., vice A. B. Copley, promoted.

George Collins, whose appointment as superintendent of the Ottawa division of the Canadian Northern with headquarters at Trenton, Ont., has been announced in these columns, was born on July 20, 1860, at Carrying Place, near Trenton, and was edu-



cated in the public schools of Trenton. He began railway work in June, 1882, on the Central Ontario, and has been in the continuous service of that road ever since. From 1884, to 1890, he was agent at Trenton, and during the next two years served as a train despatcher. He was then to 1894, secretary, treasurer and assistant superintendent, and from 1894, to 1902, was general superintendent and secretary. From 1902, to 1906, he was receiver and manager, and since that time was general manager and secretary of the same road until his recent appointment as superintendent of the Ottawa division of the Canadian Northern. Mr. Collins was also a director of the Central Ontario from 1903, to 1914, when the road was taken over by the Canadian Northern.

#### Traffic

V. D. Fort, assistant freight traffic manager of the Illinois Central at Chicago, has been transferred to Memphis, Tenn.

J. T. Graffis, traveling freight agent of the Minneapolis & St. Louis, with headquarters at Indianapolis, Ind., has been appointed general agent traffic department at that place, succeeding A. E. Lee, resigned.

Frank B. Townsend, whose appointment as traffic manager of the Minneapolis & St. Louis, with headquarters at Minneapolis, Minn., has already been announced, was born October 22, 1875,



F. B. Townsend

at Kirbyville, Mo. He was educated in the public schools of Marshalltown, Iowa, and began railway work in February, 1892. He was for ten years in the accounting and traffic departments of the Iowa Central, and in 1904 he became traveling freight agent of that road and the Minneapolis & St. Louis, with headquarters at Indianapolis, Ind. From December, 1906, to January, 1909, he was commercial agent, and the following year was general agent at Chicago. From January, 1910, to January, 1911, he was coal freight agent of the same roads and the Chicago & Alton

and the Toledo, St. Louis & Western. On the latter date he was appointed assistant general freight agent of the Minneapolis & St. Louis, from which position he was recently promoted to that of traffic manager, as above mentioned.

#### Purchasing

C. B. Williams, general storekeeper of the Central of New Jersey, at Elizabethport, N. J., has been appointed purchasing agent, with office at New York City, and LeRoy Cooley, chief clerk in the office of the superintendent of motive power, has been appointed general storekeeper, with headquarters at Elizabethport, succeeding Mr. Williams. Mr. Cooley was born on July 19, 1877, at Flemington, N. J., and began railway work in 1899, as a clerk in the office of the superintendent of motive power of the Central of New Jersey, and has been in the continuous service of that road ever since. He held various positions until September, 1908, when he was appointed chief clerk of the same office.

#### Engineering and Rolling Stock

John A. Marshall has been appointed road foreman of engines of the Northern Pacific at Duluth, Minn.

Joseph Billingham has been appointed superintendent of motive power of the Grand Trunk Pacific, with headquarters at Transcona, Man., succeeding G. W. Robb, resigned.

T. S. Lowe, road foreman of engines of the Canadian Northern at Limoilou, Que., has been appointed master mechanic of the Lake St. John division, with office at Limoilou.

T. C. Hudson, master mechanic of the Canadian Northern at Joliette, Que., has been appointed division master mechanic of the Quebec Grand division, with office at Joliette.

D. W. Gross, chairman of the valuation committee of the Atlantic Coast Line, at Wilmington, N. C., has been appointed valuation engineer, and has been relieved of all duties as engineer of construction.

William O'Brien has been appointed master mechanic of the Springfield division of the Illinois Central, with headquarters at Clinton, Ill., succeeding Fred M. Baumgardner, resigned to accept a position with the Interstate Commerce Commission, Division of Valuation.

Morgan King Barnum, general mechanical inspector of the Baltimore & Ohio, at Baltimore, Md., has been appointed superintendent of motive power of the Baltimore & Ohio proper,



M. K. Barnum

with headquarters at Baltimore, effective September 1. This position, which was abolished about a year ago, when A. P. Prendergast left the B. & O., has now been restored. Mr. Barnum was born on April 6, 1861, and was graduated from Syracuse University in 1884, with the degree of A. B., and later received the degree of A. M. He began railway work in 1884, as a special apprentice in the shops of the New York, Lake Erie & Western, now the Erie, at Susquehanna, Pa. He was then consecutively machinist and mechanical inspector, and later general foreman of the

same road in Salamanca, N. Y., general foreman of the Louisville & Nashville shops at New Decatur, Ala.; assistant master mechanic of the Atchison, Topeka & Santa Fe at Argentine, Kan.; superintendent of shops at Cheyenne, Wyo.; district foreman at North Platte, Neb., and then division master mechanic at Omaha, Neb., on the Union Pacific; assistant mechanical superintendent of the Southern Railway. In February, 1903, he was made superintendent of motive power of the Chicago, Rock Island & Pacific, and in April of the following year was appointed mechanical expert of the Chicago, Burlington & Quincy; in 1907 he was appointed general inspector of machinery and equipment, of the same road. He left that road in April, 1910, to become general superintendent of motive power of the Illinois Central and the Yazoo & Mississippi Valley, remaining in that position until July 1, 1913, when he became general mechanical inspector of the Baltimore & Ohio, and now becomes superintendent of motive power of the same road as above noted.

#### OBITUARY

William Tinkham, formerly president of the Providence & Springfield, now a part of the New York, New Haven & Hartford, died on August 20, at Providence, R. I., at the age of 92.

William E. Harwig, formerly, from 1902 to 1912, supervisor of bridges and buildings on the Lehigh Valley, died on August 24, at his home in Phillipsburg, N. J. Mr. Harwig entered the service of the Lehigh Valley in 1878, and about two years ago left that company to become supervisor of bridges and buildings on the Lehigh & New England.

John Player, formerly superintendent of machinery of the Atchison, Topeka & Santa Fe, died at Chicago on August 14, aged 67 years. Mr. Player began railway work in June, 1873, and until September, 1887, was with the Central Iowa consecutively as machinist, general foreman of shops, master mechanic and also in charge of the car department. He then became superintendent of motive power of the Wisconsin Central, leav-

ing that road in June, 1890, to go to the Atchison, Topeka & Santa Fe as superintendent of machinery, which position he held until January, 1902, when he was appointed consulting superintendent of motive power. In June of that year he retired from active railway service on account of ill health.

Isaac Duell Barton, formerly from 1881 to 1892 general superintendent of the Long Island, died on August 21, at his home in Flushing, N. Y., at the age of 80. He began railway work in 1852, as a station agent on the New York & Harlem, now a part of the New York Central & Hudson River, and was then consecutively freight conductor, passenger conductor, general freight agent and assistant superintendent of the same road. He was then superintendent of the Long Island, and subsequently became superintendent of the United States Rolling Stock Company. He then served consecutively as general superintendent of the Atlantic & Great Western, superintendent of the North Shore & Central of Long Island, superintendent of construction of the Manhattan Beach Railroad, general superintendent of the Indiana, Bloomington & Western, and general superintendent of the Manhattan Beach Railroad. On January 1, 1881, he was appointed general superintendent of the Long Island, remaining in that position until January, 1892, and then was general superintendent of the New York & New England. Mr. Barton was general superintendent of the Brooklyn Elevated Railroad from February, 1894 to 1900, and then retired from active service.

Edgar Thaddeus Welles, vice-president of the Wabash Railroad, with headquarters at New York, died on August 22, at his home in that city. He was born on August 29, 1843, at Hartford, Conn., and was a son of Gideon Welles, who was secretary of the navy in President Lincoln's cabinet. Mr. Welles was graduated from the high school of his native town, and then from Yale College, in the class of 1864. Shortly after leaving college Mr. Welles was admitted to the bar, but never practiced. He was vice-president of the Wabash Railroad since its reorganization and was, previous to that time, vice-president of the Wabash Western Railway. He was formerly president of the Peninsular Railway of Lower California, and in addition was a director of the Ohio & Mississippi, now a part of the Baltimore & Ohio Southwestern, the Wabash and the Peoria & Pekin Union.



E. T. Welles

**ROLLING STOCK FOR ARGENTINE RAILWAY**—The Central Argentine Railway has recently ordered the following rolling stock in England: 40 freight engines; 20 passenger engines, 25 switch engines, 14 sleeping cars, 4 first-class passenger cars, 50 first-class motor cars for the electric line from Buenos Aires to the Tigre, 20 second-class motor cars, 50 trailers, 1 dining car, 15 baggage cars for passenger trains, 15 baggage cars for freight trains, 100 ballast cars, 745 closed freight cars, and 300 freight cars for live stock. With these orders, the total rolling stock of the Central Argentine Railway will be as follows: 265 freight engines, 353 passenger engines, 125 switch engines, 102 sleeping cars, 226 first-class passenger cars, 158 second-class passenger cars, 109 passenger cars for both first and second class, 100 first-class motor cars, 70 second-class motor cars, 100 trailers, 30 dining cars, 11 restaurant cars, 168 baggage cars for passenger trains, 353 baggage cars for freight trains, 334 ballast cars, 11,310 closed freight cars, 1,250 freight cars for live stock, 1,465 flat cars, 2,675 open cars with high sides, 1,841 open cars with low sides, 552 cars with grating, and 38 refrigerator cars.

## Equipment and Supplies

### LOCOMOTIVE BUILDING

THE DETROIT, TOLEDO & IRONTON is in the market for 10 locomotives.

THE ATLANTA, BIRMINGHAM & ATLANTIC has ordered five Mikado type locomotives from the Baldwin Locomotive Works.

THE CENTRAL OF GEORGIA has indefinitely postponed its inquiry for four locomotives reported in the *Railway Age Gazette* of July 24.

THE ILLINOIS CENTRAL has withdrawn for an indefinite time its inquiry for three hump switching locomotives reported in the *Railway Age Gazette* of July 24.

THE CINCINNATI, HAMILTON & DAYTON, as reported in the *Railway Age Gazette* of last week, has ordered 30 Mikado and 5 Pacific type locomotives from Lima Locomotive Corporation. The Mikado type locomotives will have 64 in. driving wheels, 26 by 32 in. cylinders, a weight on the drivers of 223,600 lb., a total weight in working order of 282,200 lb., a boiler pressure of 190 lb., and a tractive effort of 54,587 lb. The Pacific type locomotives will have 76 in. driving wheels, 24 by 28 in. cylinders, a weight on the drivers of 159,200 lb., a total weight in working order of 248,600 lb., a boiler pressure of 190 lb., and a tractive effort of 34,272 lb.

### CAR BUILDING

THE CAROLINA & NORTH WESTERN is in the market for 100 30-ton box cars.

THE WINSTON-SALEM SOUTHBOUND is in the market for about 35 freight cars.

THE CHESAPEAKE & OHIO is in the market for 30 eight-wheel steel underframe caboose cars.

THE HAVANA CENTRAL has ordered 6 steam and 6 electric passenger cars from the Wason Manufacturing Company. The same company has also placed orders for 315 freight cars.

THE BALTIMORE & OHIO, reported in the *Railway Age Gazette* of August 7 as being in the market for 29 passenger cars for the Cincinnati, Hamilton & Dayton, is in the market for 12 70-ft. coaches and one 73-ft. steel dining, 8 70-ft. passenger and baggage, 5 70-ft. baggage and mail and 4 70-ft. baggage cars.

### IRON AND STEEL

THE CHICAGO SURFACE LINES have ordered 574 tons of steel for underframes for its cars from the J. G. Brill Company.

### SIGNALING

The Illinois Central has recently appropriated \$14,000 for the equipment of a telephone system of train despatching between Clinton and Centralia, Ill., a distance of 115 miles. Work will be begun immediately, and the date of completion is set as October 1, 1914. This company has just put in operation the Coalfield train despatching telephone system on the St. Louis division. This system extends between Carbondale, Eldorado, Johnston City and Marion, Ill., a total distance of 95 miles.

The Union Switch & Signal Company has taken an order from the Baltimore & Ohio for furnishing the material and installing a type "F" electric interlocking plant at Calumet River Draw; one from the Missouri, Kansas & Texas, for installing a mechanical interlocking plant at Whiteright, Tex., and one from the Nashville, Chattanooga & St. Louis for installing an electro-mechanical interlocking plant at Cravens Yard. This machine will consist of 16 mechanical levers and 16 style "S" electric levers.



## Supply Trade News

The C & C Electric & Manufacturing Company, Garwood, N. J., has opened a branch sales office, in charge of R. L. Wells, in the Security building, Minneapolis, Minn.

Graham Dodge, assistant sales manager of the Edgar Steel Seal & Manufacturing Company, Chicago, has been appointed assistant general manager, in addition to his present duties.

R. L. Brown has resigned as sales agent of The Barney & Smith Car Company, Dayton, Ohio, to become associated with Hotchkiss-Blue & Co., Ltd., Railway Exchange building, Chicago.

The Chicago Car Heating Company, Chicago, on August 22, removed its southern office from 521 Realty Trust building, Atlanta, Ga., to 829 Munsey building, Washington, D. C. This office will still be known as the company's southern office and will remain in charge of Harry F. Lowman as southern manager.

C. W. Rhoades has been appointed manager of sales of the Daniels Safety Device Company, manufacturer of the "Bulldog" nut, with office in the Webster building, 327 South La Salle street, Chicago. Mr. Rhoades was formerly assistant sales manager of Valentine & Co., Chicago, and previously was with the St. Louis Surfacor Company.

Wm. Wharton, Jr., & Co., Inc., Philadelphia, Pa., have appointed R. T. Hoffman & Co., Inc., their representatives for the southern Atlantic coast states, effective August 1. The latter company has main offices in the Continental Bank building, Baltimore, Md., and an Atlanta, Ga., office in charge of H. F. McDermott in the Candler building.

H. D. Shute has been elected treasurer of the Westinghouse Electric & Manufacturing Company, to succeed T. W. Siemon, who recently resigned to become secretary and treasurer of the Union Switch & Signal Company. J. J. Hanauer has been elected a director to succeed Paul M. Warburg, resigned, and T. P. Gaylord has been elected vice-president, succeeding Mr. Shute.

W. L. Rickard, of Rickard & Sloan, Inc., New York, will leave that city in the latter part of September to make an extended trip, lasting possibly between four and five months, through South America. He will visit the principal cities on both coasts and will make a thorough investigation of the markets and the best methods of selling machinery and mechanical materials and devices in the Latin-American countries.

Judge Killitts of the United States District Court of the Northern District of Ohio, Western division, on August 15 handed down a decision finding that the Baker valve gear patents Nos. 721, 994 and 1,008,405 of the Pilliod Company are valid and that the Pilliod Brothers Company and Charles J. Pilliod in the manufacture and sale of their so-called B valve gear infringe claim 8 of patent No. 721,994 and claims 1 and 2 of patent 1,008,405. Both defendants are estopped from denying the validity of the latter patent, it being stated in the decision that: "It is quite plain that, while Charles J. Pilliod was still a member of the complainant company, Baker was under obligation to give to that company and did give thereto the benefit of his inventions which crystallized in Baker patent No. 1,008,405, and that the complainant company's interest in this invention was one of the property incidents with which Charles J. Pilliod parted for a valuable consideration when he sold his interest in complainant company."

### TRADE PUBLICATIONS

**WASHERS.**—The National Malleable Castings Company, Cleveland, Ohio, has recently issued circular No. 52, descriptive of its line of malleable iron washers and bridge pin nuts.

**AIR COMPRESSORS.**—Ingersoll-Rand Company, New York, has recently issued Form No. 3030 descriptive of Ingersoll-Rogler class ER-1, power driven single stage straight line air compressors and Form No. 3024 descriptive of Ingersoll-Rogler valves for air compressing cylinders.

**UNION PACIFIC.**—The passenger department has issued a very attractive folder entitled "The Scenic Columbia River Route to the Great Pacific Northwest," for the purpose of influencing travel to Alaska and the northwest, and also treating of the circle tours of the West.

**TOURS TO THE EAST.**—The Great Northern Steamship Company has recently published an interesting folder containing a description and illustrations of numerous points of interest in Japan, China and the Philippines. The booklet also gives detailed information regarding the schedules of the steamer Minnesota, and the accommodations for passengers.

**METAL SHEETS.**—"Evidence" is the title of an interesting booklet recently issued by the Stark Rolling Mill Company, Canton, O., containing testimonial letters from various firms and also views of a large number of buildings upon which Toncan metal corrosion resisting sheets and products were used. The buildings shown are of many varieties, several railway stations and shops being included in the number.

**MAGNETO TELEPHONES.**—The Western Electric Company has recently issued a detailed catalogue descriptive of its line of magneto telephones and supplies. The same company has also issued a similar booklet illustrating and describing the various telephone cords which it manufactures. In this it is stated that the Western Electric Company during 1913 shipped 1,218,718 desk stand cords, 1,380,609 switchboard cords, 2,077,513 receiver cords and 1,108,700 transmitter cords.

**RAIL REPORTS.**—The Titanium Alloy Manufacturing Company has issued bulletin No. 7 of its series of rail reports, giving the results of tests of three additional Titanium treated open hearth and three plain open hearth rails in addition to the 14 similar comparisons published in previous reports. The report is accompanied by sulphur prints, etched sections and photographs of magnified sections. These reports are of more than ordinary interest to students of the rail problem.

**BALL BEARINGS.**—The S. K. F. Ball Bearing Company of New York has recently issued bulletin No. 16 dealing with the use of ball bearings as applied to electric motors. The booklet, which contains 36 pages, gives views of ball bearings and of different machines on which they have been installed. The reading matter deals largely with the advantages to be obtained from the use of S. K. F. bearings and names such items as improvements in motor efficiency, lubrication, maintenance charges, compactness, etc.

**PUMPING MACHINERY.**—The National Transit Company, Oil City, Pa., has recently issued bulletins Nos. 10 and 11 descriptive of the company's line of pumping machinery. The bulletins contain a number of views of the company's shop. There are also illustrations of a number of the pumps which the company makes, a table of sizes and capacities being given in connection with each. Bulletin No. 10, in addition, indicates the information that is necessary in ordering and contains a number of directions for setting up and operating the pumps.

**THE YOUNG MAN AND THE ELECTRICAL INDUSTRY.**—This is the title of a story written by James H. Collins which has recently been issued in pamphlet form by the Westinghouse Electric & Manufacturing Company, East Pittsburgh, Pa. The little book contains an article reprinted from the Scientific American of May 16, 1914, which deals with the opportunities afforded a young man in this industry and the different lines in which he may direct his activities, particular reference being given to the way in which the problem is solved in the work of the Westinghouse company.

**MODERN METHODS IN TRAIN DESPATCHING.**—The Western Electric Company has issued an attractive 16-page booklet by this name containing a brief history of train despatching and showing wherein telephones are superior to the telegraph. The booklet contains a list of the railroads on which telephones are used. It also contains views of a typical train despatcher's office, a tower, etc., as well as illustrations of the various kinds of equipment used. There is also a very interesting inset in the form of a photographic copy of the Pittsburgh & Lake Erie train despatching sheet for April 19, 1913, on which day the road was able to handle a record-breaking movement by means of its telephone despatching, even though the line was only partly re-established after the floods.

## Railway Construction

**BEAVER, MEADE & ENGLEWOOD.**—We are told that grading work has been finished on the section from Beaver, Okla., north to Forgan, 6.5 miles, and contracts have been let to John L. Love, Oskaloosa, Iowa, for the track laying, and to R. F. Baker, Oskaloosa, for building a pile bridge over the Beaver river. The plans call for building from Beaver north to Meade, Kan., 40 miles. Frank McKillips, president, Beaver. (April 17, p. 927.)

**BOSTON ELEVATED.**—The Boston Transit Commission has given a contract to the Hugh Nawn Contracting Company at \$673,780 for building section D of the Dorchester tunnel, at Boston, Mass. This contract covers about 800 lineal feet, one-half of which will be tunnel excavation and the other half open cut work.

**CANADIAN NORTHERN.**—An officer writes that grading work is about finished on the line from Bienfait, Sask., west to Estevan, about 8.5 miles. The work was carried out by the Western Canada Construction Company, Winnipeg, Man. The only grading yet to be done is a small section at Bienfait, which is now being carried out by H. Nicholson, Estevan, Sask. (August 14, p. 310.)

**CANADIAN PACIFIC.**—The report of this company for the year ended June 30, 1914, shows that the company has 941.5 miles of new line under construction, on which work is now under way, as follows:

Name	Ontario Division	Miles
Campbellford, Lake Ontario & Western; Glen Tay, Ont., to Agincourt		182.3
<i>Lake Superior Division</i>		
Interprovincial & James Bay; Kipawa, Que., north.....		10.0
<i>Manitoba Division</i>		
Selkirk branch; Gimli, Man., north.....		26.0
Snowflake branch; Snowflake, Man., west.....		10.0
<i>Saskatchewan Division</i>		
Weyburn branch; Shaunavon, Sask., to mile 317.....		87.7
Moose Jaw Southwest branch; Mileage 35 to 50.....		15.0
<i>Alberta Division</i>		
Swift Current North branch; Swift Current, Sask., north.....		23.4
Swift Current North branch; Coronation, Alta., northwest.....		25.0
Stirling East branch; Stirling, Alta., east.....		75.0
Bassano East branch; Bassano, Alta., to Empress.....		118.3
Suffield branch; Suffield, Alta., southwest.....		27.0
Gleichen branch; Gleichen-Shepard.....		40.0
Alberta Central; Red Deer, Alta., west.....		64.5
Kootenay Central; Fort Steele North branch.....		81.3
Calgary & Edmonton; Lacombe, Alta., east.....		72.1
<i>British Columbia Division</i>		
Kootenay Central; Golden, B. C., south.....		18.0
Kaslo & Slocan; Whitewater to Kaslo.....		17.5
Esquimalt & Nanaimo; Osborne Bay Junction to Crofton.....		3.4
Esquimalt & Nanaimo; McBride Junction to Courtenay.....		45.0
Total .....		941.5

**CHEHALIS & COWLITZ.**—See Washington Electric.

**ERIE & ONTARIO.**—See Toronto, Hamilton & Buffalo.

**GLENGARRY & STORMONT.**—Work is now under way building from a point about a mile west of Polycarpe station, Quebec, on the Canadian Pacific to Cornwall, Ont., 28 miles. The Glengarry Construction Company, Montreal, Que., has the general contract and sub-contracts have been let for most of the work. A. A. Mellor, chief engineer. (May 1, p. 1011.)

**LEHIGH VALLEY.**—The report of this company for the year ended June 30, 1914, shows that the extension of the Seneca Falls branch for 5.7 miles to a connection with the New York Central & Hudson River, also the rebuilding of the Cayuga branch and the installation of a "weye" connection with the Auburn & Ithaca branch at Cayuga Junction, N. Y., were completed. Work on a third track from Pittsburgh & Lehigh Junction, N. Y., to North LeRoy 4.98 miles was also finished. During the year the company laid 40.39 miles of company's sidings and 3.81 miles of industrial sidings. Work was finished on the excavation of the rock cut and building the necessary concrete walls to provide room for the construction of a switching lead from Florence yard, and construction of the track will be started soon. An additional switching lead and tracks were constructed at Richards, and a trestle for the necessary tracks for transferring bulk freight was built at Suspension Bridge. Tracks with a capacity of forty cars to provide for the trans-

ferring of freight from crippled cars were constructed at Tift Farm, Buffalo. The yards at Plainsville, Delano and South Plainfield were enlarged; the yard at Sterling was rearranged and the capacity slightly increased, and the yard tracks at Ithaca were moved to a new location.

**MISSOURI, ARKANSAS & SOUTHWESTERN.**—An officer writes that this company has been incorporated in Arkansas with \$2,500,000 capital, to build from Mena, Ark., east to Hot Springs, about 80 miles. The general contract has been given to the Century Construction Company, Mena. A. H. Scoggin, president; J. H. Hamilton, vice-president; Minor Pippin, secretary; J. W. Bradley, treasurer, and George D. Thayer, chief engineer, Mena. (August 21, p. 369.)

**NASHVILLE, SHILOH & CORINTH.**—An officer writes that this company has been given a charter to build from Corinth, Miss., in a general northeasterly direction, via Savannah, Tenn., Waynesboro, Linden and Centerville to Nashville, about 160 miles. Bonds for a total of \$750,000 in aid of the project have been voted by several counties along the proposed route. About October 1, the city of Nashville and the county of Davidson will vote on the question of issuing \$1,250,000 additional bonds, and if carried the construction of the line will be started at once. The plans include building a drawbridge over the Tennessee river, and also two other bridges over the Buffalo river. The company expects to develop a traffic in iron ore, phosphate and timber, also agricultural products. Allen W. Jones, president, Midville, Ga., and Clopton Thomas, secretary, Corinth, Miss. (August 7, p. 268.)

**NEW YORK SUBWAYS.**—The New York Public Service Commission, First district, has given a contract to the Flinn-O'Rourke Company, Inc., for building Section 3 of Route No. 33, the Montague street section of the Whitehall-Montague street tunnel in the borough of Brooklyn. This firm was the lowest bidder at \$3,395,152. The commission is asking for bids until September 15, for building Section 2 of Route No. 48, the William street section of the Park place, William and Clark street subway.

**NORFOLK & WESTERN.**—An officer writes that a contract has been given to W. W. Boxley & Co., Roanoke, Va., to build the Tug River & Kentucky up Blackberry creek to the mouth of Peters creek, in Pike county, Ky., about 1.4 miles, also for building the masonry of a bridge over Tug river.

**PENNSYLVANIA RAILROAD.**—We are told that a contract has been given to A. L. Anderson & Brothers, Inc., Altoona, Pa., to build a 3.5-mile single track extension of the Homer & Cherrytree branch of the Conemaugh division to coal lands in Indiana county, Pennsylvania.

**SALT RIVER VALLEY (Electric).**—An officer writes that a contract will be let within thirty days to build from Phoenix, Ariz., south thence east via Tempe to Mesa thence south to Chandler. The company plans to build one steel bridge, a car-barn, power house and also a number of sub-stations, and expects to develop a traffic in local freight, alfalfa, dairy products, fruit, vegetables and live stock. The headquarters of the company are at Phoenix.

**SAN DIEGO & ARIZONA.**—Bids were recently received by this company, it is said, to build about 46 miles of line through San Diego county, Cal. The lowest bidder was the Utah Construction Company, Ogden, Utah. This company is building from Seeley, Cal., west through California and Mexico to San Diego, Cal., 139 miles, of which about 65 miles has been completed. (April 24, p. 967.)

**SAVANNAH WESTERN.**—Incorporated in South Carolina with headquarters at Columbia to build from Estill, northeast through Hampton, Colleton, Bamberg, Orangeburg and Clarendon counties to St. Paul, about 90 miles. The incorporators include G. H. Milligan, Charleston, S. C., Virgil Walker and Adrian M. Rea of Newbern, N. C.

**SOUTHERN RAILWAY.**—An officer writes that contracts have just been let for the construction of 36 miles of double track on the Danville division between Greensboro, N. C., and Pelham. The contract from mile post 248 to 263 was let to the Parker Brooks Construction Company, Greenville, S. C., and from mile post 263 to 284 to the Morrow Contracting Company, Atlanta, Ga. This makes a total of 75 miles of double track work on the Washington-Atlanta line which the Southern has placed under contract recently.



**TEXAS ROADS.**—I. H. Fetty of Kansas City, Mo., and associates will build a 15-mile railroad from Conroe, Tex., to timber lands, which they control. It is said that the line will be operated chiefly in the interest of the Delta Land & Lumber Company and will be extended later to a point in eastern Texas.

**TORONTO, HAMILTON & BUFFALO.**—An officer of the Erie & Ontario writes that this company has been incorporated in Canada and the general location from Smithville, Ont., via Dunnville to Port Maitland about 20 miles has been approved. Contracts were let recently to Fitch & Douglas, Oshawa, and to Robert Bennett, Dunnville, and construction work is well under way between Smithville and Dunnville which is on the Grand river, 4.5 miles from Port Maitland. The grading work involves handling about 8,000 cu. yd. to the mile. The maximum grades will be 0.4 per cent and maximum curvature 3 deg. on the main line and 8 deg. on branch lines to the terminals. The plans call for building an 87-ft. steel bridge over Twenty Mile creek; two 160-ft. trestles over Welland river and Oswego creek, and a passenger station with a freight shed at Dunnville. The principal commodities the line will carry are manufactured articles, farm produce and merchandise. The prospects of making Dunnville an industrial center is largely the reason for building the line. J. N. Beckley, president, Rochester, N. Y., and R. L. Latham, chief engineer, Hamilton, Ont. (August 7, p. 269.)

**WASHINGTON ELECTRIC.**—Work is now under way on the 10-mile extension of the Chehalis & Cowlitz, it is said, along the south fork of the Newaukum river to a point beyond Onalaska. (May 22, p. 1171.)

## RAILWAY STRUCTURES

**CHICAGO, ILL.**—Plans are being made for beginning work on the new union station soon after September 20. The roads have until that date to accept the ordinances providing for the erection of the station. The Union Station Company has decreased its capital stock from \$50,000,000 to \$3,500,000.

**GUNPOWDER, MD.**—The Pennsylvania Railroad has given a contract to the J. T. Gorsuch Construction Company, Baltimore, Md., for renewal work on the concrete bridge at Gunpowder falls.

**MORTONVILLE, PA.**—The Philadelphia & Reading has given a contract to Enos L. Seeds, Philadelphia, Pa., it is said, to build a re-inforced concrete bridge at Mortonville.

**SAN DIEGO, CAL.**—The new passenger station of the Atchison, Topeka & Santa Fe at San Diego, Cal., which is being erected at the foot of Broadway, on the site of the old station, is about one-third completed. The new building is 55 ft. by 292 ft. in area and one story high. It is of steel frame construction with a brick veneer and finished in stucco. There will be four additional tracks leading to the station. Work was begun in March, and it is planned to complete it by January 1, 1915. The estimated cost, including the laying of the new tracks, is \$325,000. The William Simpson Construction Company, San Diego, has the general contract for the erection of this station.

**RAILWAY EXTENSION IN THE SHANTUNG PROVINCE OF CHINA.**—At the present time there are 946 miles of railway in the Chinese Shantung Province, 256 miles of which are included in the Shantung railway and 690 miles in the Tientsin-Pukow line. It has also been proposed to construct three new lines as follows: From Tehchow on the Tientsin-Pukow line to Shuntefu on the Peking Hankow Railway, about 150 miles distant; from Kaomi on the Shantung Railway southwest to Hsuehowfu also on the Tientsin-Pukow line, about 300 miles distant, and from Chefoo to Weihsien on the Shantung Railway, 200 miles. It was reported a short while ago that arrangements were being perfected in Peking between the German commissioners and the Chinese Government for the construction of the first two lines. It was presumed that they would be constructed by German capital and under German superintendence, eventually to be turned over to the Chinese Government for operation by the Chinese in a similar fashion to the Tientsin-Pukow line. The matter of constructing the projected Chefoo-Weihsien line was likewise receiving the consideration of the Chinese Government, and it was reported that the road would probably be constructed with German capital and German materials also.

## Railway Financial News

**MICHIGAN CENTRAL.**—The company announced last week that one year 6 per cent notes, maturing this week, to the amount of \$2,000,000 would be paid off.

**MOBILE & OHIO.**—A special meeting of stockholders has been called, to be held at Mobile, September 25, to vote on a proposal to authorize the issuance of bonds to the amount of \$50,000,000. The company has abandoned the proposed note issue of \$3,000,000, which was part of the financial plan announced recently to provide for real estate, improvements and equipment. The present proposal is to issue bonds as the market may be found to be favorable. Among the items for which money is needed in the immediate future are \$1,200,000 to reimburse the company's treasury for expenditures for additional real estate in Birmingham and Mobile, new yard facilities at Meridian, Miss., and other improvements; \$1,200,000 for additional passing and other tracks, double-tracking 57 miles of main line, additional water and coal stations, and additional shop facilities.

**NEW JERSEY & PENNSYLVANIA.**—See Northern Central of New Jersey.

**NEW YORK, NEW HAVEN & HARTFORD.**—This company has issued a brief statement of the financial results for the 12 months ended June 30, which shows balances over fixed charges, for the several companies in which the New Haven is interested, as follows:

New York, New Haven & Hartford, surplus.....	\$268,662
Central New England, surplus.....	230,020
New York, Ontario & Western, surplus.....	663,692
New England Steamship Company, deficit.....	77,802
Hartford & New York Transp'n Co., surplus.....	85,965
New Bedford, M. V. & N. Steamboat Co., surplus....	62,708
The Connecticut Company, surplus.....	1,501,072
The Rhode Island Company, surplus.....	347,642
Berkshire Street Railway Company, deficit.....	72,507
New York & Stamford Railroad Company, deficit....	5,824
Westchester Street Railway Company, surplus.....	4,883
New York, Westchester & Boston, deficit.....	246,923
Housatonic Power Company, surplus.....	78,506
Westport Water Company, surplus.....	1,664

The New Haven's interest in the Ontario & Western is only 50.1 per cent. The statement says:

"Every property in which the New Haven is interested earned all fixed obligations except The New England Steamship Company and that company showed improved results, in that the shortage of \$355,070 for the fiscal year ending June 30, 1913, was reduced to \$77,802. The Berkshire Street Railroad shows an improvement of \$19,354. The New York & Stamford reduced a deficit last year of \$36,556 to \$5,824 this year. The New York, Westchester & Boston (apart from the interest on its bonds and notes) reduced its deficit from \$334,554 to \$246,923, an improvement of \$87,630. The Rhode Island trolleys had a new wage scale on a much higher basis than a year ago, in addition to heavy maintenance expenses. The steamer lines all did a little better in net than last year."

For the New Haven proper the statement is as follows (cents omitted):

	Month of June		Twelve months to June 30	
	1914	1913	1914	1913
Operating Revenue, including net results of Outside Operations .....	\$5,775,784	\$5,386,488	\$66,703,172	\$69,258,950
Operating Expenses and Taxes .....	4,447,427	3,592,801	52,083,568	50,942,094
Operating Income .....	\$1,328,356	\$1,793,687	\$14,619,604	\$18,316,855
Other Income .....	2,086,708	5,472,262	7,247,989	10,063,784
Gross Income .....	\$3,415,065	\$7,265,950	\$21,867,593	\$28,380,640
Deductions—interest, rentals, etc. ....	1,848,499	1,636,310	21,598,931	19,458,402
Net Corporate Income.....	\$1,566,566	\$5,629,639	\$268,662	\$8,922,237

**NORTHERN CENTRAL RAILROAD OF NEW JERSEY.**—This is the name of a company which is being organized to take over the New Jersey & Pennsylvania Railroad, which is being rehabilitated by the Central New Jersey Construction Company. The president of the new company is Frank W. Patterson of Bound Brook, N. J. The line of the road is from White House, on the Central of New Jersey, northward, 27 miles, to Morristown.

## ANNUAL REPORTS

## SIXTIETH ANNUAL REPORT OF THE LEHIGH VALLEY RAILROAD COMPANY

PHILADELPHIA, August 12, 1914.

To the Stockholders of the

LEHIGH VALLEY RAILROAD COMPANY.

The Board of Directors herewith submit the annual report of the business and condition of your Company for the fiscal year ended June 30, 1914.

## MILEAGE

The first track mileage owned or controlled and operated by the Lehigh Valley Railroad Company, the main line of which is double track, extending from Jersey City, N. J., to Buffalo and Suspension Bridge, N. Y., is as follows:—

	MILES
Lehigh Valley Railroad Company.....	316.90
Controlled by ownership of entire capital stock.....	938.90
Controlled by ownership of majority of capital stock and lease....	115.37
Operated under lease.....	27.73

Total mileage operated (owned or controlled).....	1,398.90
Trackage rights over railroads owned by other companies.....	44.84

Total first track mileage..... 1,443.74

In addition to the above there are 595.36 miles, or 41.24 per cent., of second track, 99.51 miles of third track, 44.84 miles of fourth track and 1,207.56 miles of yard tracks and sidings, a total of 3,391.01 miles of track in operation at the close of the year. A detailed statement of track mileage is shown on pages 49 to 51. The average number of miles of railway operated for the year was 1,439.99, upon which the mileage statistics in certain tables submitted in this report are based.

The total increase of 36.18 track miles over the preceding year is due, in the main, to the construction of the Seneca Falls Branch, extension of third track and additional sidings at terminals and important yards.

## OPERATING REVENUES AND EXPENSES

The following statements set forth the total revenues and expenses and net revenue from operation for the fiscal year, not including outside operations and other income, compared with similar figures for the fiscal year 1913. The complete income account appears on page 26.

FROM	OPERATING REVENUES		INCREASE	DECREASE
	1914	1913		
Coal freight .....	\$18,492,683.35	\$20,385,389.09	.....	\$1,892,705.74
Merchandise freight .....	15,026,684.11	16,339,748.97	.....	1,313,064.86
Passenger .....	4,795,147.44	4,867,554.03	.....	72,406.59
Mail .....	195,052.87	191,821.11	\$3,231.76	.....
Express .....	443,971.75	506,191.11	.....	62,219.36
Other transportation .....	478,453.44	415,731.71	62,721.73	.....
Miscellaneous .....	351,570.99	336,935.87	14,635.12	.....
Total operating revenues .....	\$39,783,563.95	\$43,043,371.89	.....	\$3,259,807.94
	OPERATING EXPENSES.		INCREASE	DECREASE
	1914	1913		
Maintenance of way and structures....	\$4,575,061.96	\$5,694,422.24	.....	\$1,119,360.28
Maintenance of equipment .....	7,011,946.34	7,561,270.87	.....	549,324.53
Traffic expenses....	1,002,872.11	982,857.66	\$20,014.45	.....
Transportation expenses .....	14,071,182.70	13,993,617.35	77,565.35	.....
General expenses....	948,098.72	875,651.45	72,447.27	.....
Total operating expenses .....	\$27,609,161.83	\$29,107,819.57	.....	\$1,498,657.74
NET OPERATING REVENUE .....	\$12,174,402.12	\$13,935,552.32	.....	\$1,761,150.20
Ratio of operating expenses to operating revenues....	69.40%	67.62%	1.78%	.....

## OPERATING REVENUES.

## COAL FREIGHT.

The transportation of coal and coke produced a revenue of \$18,492,683.35, a decrease of \$1,892,705.74, or 9.28 per cent., as compared with the preceding twelve months.

The percentage of coal freight revenue to total operating revenues was 46.48 per cent., a decrease of .88 per cent.

The coal and coke transported, excluding the Company's supply coal, was 16,464,948 tons, a decrease of 1,430,459 tons, or 7.99 per cent.

This class of tonnage was 55.02 per cent. of the total tonnage hauled during the year, a decrease of .27 per cent.

## MERCHANDISE FREIGHT.

The revenue received from the transportation of merchandise freight was \$15,026,684.11, a decrease of \$1,313,064.86, or 8.04 per cent., as compared with the preceding year.

The revenue derived from the transportation of merchandise freight was 37.77 per cent. of the total operating revenues, a decrease of .19 per cent.

The tonnage moved, excluding Company's material, was 13,459,171 tons, a decrease of 7.00 per cent.

## GENERAL FREIGHT.

The total revenue from both coal and merchandise freight was \$33,519,367.46, a decrease of \$3,205,770.60, or 8.73 per cent., as compared with the preceding twelve months.

The entire freight traffic amounted to 29,924,119 tons, a decrease of 2,443,677 tons, or 7.55 per cent.

The number of tons carried one mile was 5,218,751,555, a decrease of 593,633,362 ton miles, or 10.21 per cent.

The average haul was 174.40 miles, a decrease of 5.17 miles, or 2.88 per cent.

The average revenue per ton was 112.01 cents, as compared with 113.46 cents last year, a decrease of 1.45 cents, or 1.28 per cent.

Company's freight, not included in the above, amounted to 3,135,755 tons, a decrease of 186,286 tons, or 5.61 per cent.

The total freight train mileage was 8,768,300 miles, a decrease of 935,011 miles, or 9.64 per cent.

The revenue received per freight train mile was \$3.82, an increase of \$0.01, or 1.06 per cent.

The average trainload of revenue freight was 595.18 tons, a decrease of 3.83 tons, or .64 per cent. Including Company's freight, the average trainload was 617.13 tons, a decrease of 3.58 tons, or .58 per cent.

## PASSENGER.

The earnings from passenger traffic amounted to \$4,795,147.44, a decrease of \$72,406.59, or 1.49 per cent., compared with the preceding year.

The total number of passengers carried was 5,729,042, an increase of 210,518, or 3.81 per cent.

The number of passengers carried one mile decreased 6,353,172, or 2.34 per cent.

The average revenue per passenger was 83.70 cents, a decrease of 4.50 cents, or 5.10 per cent.

The average revenue per passenger per mile was 1.807 cents, an increase of .015 cent, or .84 per cent.

The average distance traveled by each passenger was 46.31 miles, a decrease of 2.92 miles, or 5.93 per cent.

Passenger train mileage was 4,340,095, a decrease of 150,918 miles, or 3.36 per cent., as compared with this revenue of 1.49 per cent.

The average revenue from passengers per passenger train mile was 110.48 cents, an increase of 2.10 cents, or 1.94 per cent.

## MAIL.

The sum of \$195,052.87 was received from the Federal Government for the transportation of United States mails, an increase of \$3,231.76.

## EXPRESS.

The revenue from this class of business amounted to \$443,971.75, a decrease of \$62,219.36.

## OTHER TRANSPORTATION.

The earnings derived from transportation other than shown under the preceding headings were \$478,453.44, an increase of \$62,721.73.

## MISCELLANEOUS.

Miscellaneous revenue amounted to \$351,570.99, an increase of \$14,635.12.

## OPERATING EXPENSES.

## MAINTENANCE OF WAY.

The expenditures for maintenance of way and structures amounted to \$4,575,061.96, a decrease of \$1,119,360.28, or 19.66 per cent., as compared with the preceding year.

Seven steel bridges, one concrete-steel bridge and seven steel reinforced concrete culverts were built in connection with additional track construction. Eighteen steel bridges and six concrete-steel bridges were placed in the track, replacing light iron or wooden bridges and seven iron bridges were strengthened. Seven bridges were replaced by pipe culverts and three iron bridges were abandoned and the openings filled. One steel highway bridge with concrete floor was built to eliminate a grade crossing, one wooden highway bridge was replaced by a steel structure and one iron highway bridge was replaced by a new steel bridge with concrete floor. One arch culvert was extended for two additional tracks and another was filled up and abandoned.

4,203 tons of 110-pound rail, 21,440 tons of 100-pound rail and 31 tons of 90 pound rail, together with necessary frogs, switches, etc., were placed in the track.

1,146,583 tie plates and 238,649 anti-rail creepers were used.

809,663 cross ties, 2,323,285 feet B. M. switch ties, 615,754 feet B. M. bridge ties and lumber amounting to 4,139,088 feet B. M. were used.

537,952 of the cross ties, 1,882,832 feet B. M. of switch ties and 560,112 feet B. M. of bridge ties were treated with creosote.

40,761 cubic yards of crushed stone were used in ballasting track. 40,512 feet of drain tile were placed in the roadbed.

1,630.47 miles of copper and 148.76 miles of iron wire were used in extending and renewing the telephone, telegraph and signal wires on the system.

## MAINTENANCE OF EQUIPMENT.

The sum of \$7,011,946.34 was expended for the maintenance of equipment, a decrease of \$549,324.53, or 7.26 per cent., as compared with the preceding twelve months. Included therein is a charge of \$1,234,729.16 for the depreciation of equipment, as called for by the accounting requirements of the Interstate Commerce Commission.

Sixteen worn-out locomotives, one combined passenger and baggage car, one express car, 730 freight equipment cars and forty-two road service cars were condemned and either sold or destroyed during the year and their value written off the books by appropriate charges through operating expenses.

Three library buffet cars were converted into combined passenger and baggage cars, one baggage and express car into a combined baggage and mail car, three passenger coaches and one combined passenger and baggage car into workmen's cars and 169 produce cars into ice cars. Three combined passenger and baggage cars were transferred to caboose service and 140 freight equipment cars to road service.

One light passenger engine has been converted into an inspection engine. Seventy-six locomotives have been equipped with additional air pumps and fifty-two with bull's-eye lubricators, replacing old tubular lubricators, to meet the requirements of the Interstate Commerce Commission. 1,044 locomotives received heavy and general repairs.

411 passenger equipment cars received heavy repairs, 252 were painted and varnished and thirty-six equipped with electric lighting apparatus. Two dining cars, twelve wooden coaches and one milk car were equipped with steel underframes.

Steel underframes were applied to 1,779 wooden freight and coal cars, making a total of 12,372 cars so equipped during the last six years. 9,643 freight equipment cars, 154 passenger equipment cars and thirty-nine road service cars were equipped with safety appliances to conform to the requirements of the Interstate Commerce Commission. 261 steel coal cars and high side gondolas, of 100,000 pounds capacity each, were equipped with solid steel wheels. 27,480 freight equipment cars received heavy and general repairs.

The total number of locomotives on hand at the close of the year was 947, with a tractive power of 30,231,790 pounds. The total number of freight equipment cars was 46,080, with a capacity of 1,710,000 tons.

## TRAFFIC EXPENSES.

The expenditures under this heading amounted to \$1,002,872.11, an increase of \$20,014.45, as compared with the preceding twelve months.

## TRANSPORTATION EXPENSES.

The cost of conducting transportation was \$14,071,182.70, an increase of \$77,565.35, or .55 per cent., over the preceding year.

The ratio of transportation expenses to total operating revenues was 35.37 per cent., as compared with 32.51 per cent. last year, an increase of 2.86 per cent.



## GENERAL EXPENSES

This class of expenses amounted to \$948,098.72, or 2.38 per cent. of the total operating revenues. The increase of \$72,447.27, compared with the preceding year, is due almost entirely to the expenses incurred in valuing the Company's property.

## TAXES.

The taxes accrued on your property, capital and business during the year amounted to \$1,691,241.47, an increase of \$82,090.08 over the preceding year.

## ADDITIONS AND BETTERMENTS.

There was expended during the year, for the acquisition of new property and for the improvement and development of existing property, the sum of \$7,647,524.25, which was charged to Additions and Betterments. A statement of these expenditures, classified as required by the Interstate Commerce Commission, appears on page 46. The more important expenditures are here specifically referred to:—

The new equipment purchased and added to the property during the year is as follows: Thirty-eight freight locomotives, seven passenger locomotives, fifteen switching locomotives, seven locomotive tenders, thirty-five steel passenger coaches, one thousand 80,000-pound steel underframe box cars, two thousand 100,000-pound steel coal cars, twenty-six 100,000-pound flat cars, three steel well cars of 220,000 pounds capacity each, one hundred eight-wheel cabooses, two locomotive cranes and one 120-ton steam derrick. A portion of this equipment is covered by the Equipment Trusts mentioned in detail under the heading "FINANCIAL."

In addition to the foregoing, orders have been placed for three passenger locomotives, ten switching locomotives, thirty steel passenger coaches, ten steel smoking cars, twenty-five steel baggage cars, twenty-five 80,000-pound flat cars and twenty-four 100,000-pound flat cars.

Construction work in connection with the passenger and freight terminals at Buffalo is being advanced as rapidly as possible. The raising and lengthening of the viaducts carrying the several streets over the right of way was practically completed June 30th. Detail plans for the station structures are in course of preparation and work will be started thereon at an early date, as provided in the contract with the City of Buffalo.

The extension of the Seneca Falls Branch for a distance of 5.7 miles to a connection with the New York Central and Hudson River Railroad, the rebuilding of the Cayuga Branch and the installation of the necessary "Y" connection with the Auburn and Ithaca Branch at Cayuga Junction were completed and the line placed in operation on July 1, 1914. These improvements, together with trackage rights over the New York Central and Hudson River Railroad for a distance of 2.2 miles, mentioned in the preceding annual report, will shorten the haul from Auburn and points north to Geneva and points west by 55.2 miles.

The third track from Pittsburg and Lehigh Junction to North LeRoy, a distance of 4.98 miles, referred to in the last annual report, was completed, making a continuous third-track system of 12.07 miles on an ascending grade between the former point and Stafford. This improvement will greatly facilitate the movement of freight trains.

213,259 feet, or 40.39 miles, of Company's sidings and 20,117 feet, or 3.81 miles, of industrial sidings were constructed during the year.

The excavation of the rock cut and the building of the necessary concrete retaining walls to provide room for the construction of a switching lead from Florence Yard, mentioned in the preceding annual report, have been completed and the construction of the track will be undertaken shortly. An additional switching lead and tracks for crippled cars were constructed at Richards. A trestle with the necessary tracks for transferring bulk freight was built at Suspension Bridge and tracks with a capacity of forty cars to provide for the transferring of freight from crippled cars were constructed at Tift Farm, Buffalo. The yards at Plainsville, Delano and South Plainsfield were shipped, resulting in increased capacities of 205, 93 and 80 cars, respectively, and the yard for the interchange of business with the New York Central and Hudson River Railroad at Sterling was re-arranged and the capacity slightly increased. The yard tracks at Ithaca were moved to a new location, the land on which they formerly laid having been transferred to the State of New York for barge canal purposes.

Additional freight delivery tracks, with paved driveways, were constructed at East 22nd Street, Bayonne, and the driveways leading to the freight house at Elmira, the passenger and freight stations at Cortland and the passenger station at Hazleton were paved.

The concrete and steel transfer platforms, with necessary office and other buildings at Manchester, mentioned in the last annual report, have been completed and placed in operation. To facilitate the transferring of freight, electrically operated trucks are used.

Seventeen stalls of reinforced concrete construction, each 102 feet in length, were added to the Coxton roundhouse, making a total of thirty-two stalls, and in connection therewith a steel and brick machine shop was constructed.

To improve the method of cleaning the interior of freight cars used in the transportation of grain and grain products, a track with platform and hot water connections was installed at Tift Farm, Buffalo. The rebuilding of the ore dock at that point, mentioned in the preceding annual report, was completed and an electric car haulage system was installed on the coal shipping trestle.

Hollow tile and concrete structures were erected as follows: A passenger and freight station at Gorham; a passenger station at Lehigh; a freight house at East 22nd Street, Bayonne; and a tool and bunk house at Vosburg.

An ice house of 1,000 tons capacity was erected at Mauch Chunk. The ice house at Jutland was enlarged and the freight station and platform at Rochester were extended. At Warren Street, Jersey City, the milk platform was extended and the driveway paved. Improvements were made to the milk shipping stations at Jutland, Wysox, Springville, Freeville, Truxton and Fair Haven.

At Wilkes-Barre, Cortland, Auburn and Canastota 46-ft. track scales were installed, replacing 38-ft. scales, and the track scales at National Stores were strengthened and moved to a new location.

An air-testing plant was installed in the Claremont Yard, Jersey City, and air compressors were placed in the enginehouse at Lehigh and the machine shop at Hazleton. A new air compressor, with necessary extensions of the pipe lines, and an electric generator for lighting the buildings and yard, were installed at Delano. A thirty-ton electric derrick was erected at Easton.

At Coxton and Lehigh 100-ft. electrically operated turntables were installed and the 75-ft. turntable replaced at Coxton was moved to Towanda. The 60-ft. turntable at Auburn was replaced with a 70-ft. table and an electric tractor was installed on the one at Cortland.

Eighteen gasoline motor cars were purchased for use of section, bridge, signal and telegraph gangs, making a total of ninety-nine now in service.

Two 40,000-gallon standard steel water tanks were erected at the Lehigh-ton enginehouse, replacing one wooden tank, and a new 50,000-gallon wooden tank on concrete foundation was erected at Richford. A brick addition is being made to the pumphouse at Manchester and new large capacity steam pumps with boilers are being installed. Owing to the recurring shortage of water on the Mountain Cut-Off during the summer season, an emergency pumping system was installed in connection with the Gardner's Run water station, drawing water from another source. Extensive improvements are being made in connection with the water supply at Lehigh and Packerton,

comprising the construction of a reservoir of 5,000,000 gallons capacity on Beaver Run and a dam across Mahoning Creek, together with electric pumping machinery and necessary pipe lines, which will afford an independent and ample supply of water for the locomotives and shops at those points.

Mechanical interlocking plants were installed at the coal docks at Perth Amboy and at the third and fourth tracks west of Flagtown. A complete revision of the interlocking at Pittsburg and Lehigh Junction was made in connection with the third track work in that vicinity. Improvements were made to the interlocking plants at East Penn Junction, Packerton, Black Creek Junction, Hazle Creek Junction, Pittston Junction and Tift Farm Junction.

The Lehigh and Lake Erie and Ithaca Branches have been completely equipped with three-position upper-quadrant automatic acetylene gas lighted signals and the new third track from Pittsburg and Lehigh Junction to North LeRoy with two-position lower-quadrant automatic signals. The automatic disc signals between Slatington and Phillipsburg have been replaced by three-position upper-quadrant signals, acetylene gas lighted, and the automatic disc signals between Athens and Laceyville have been replaced by two-position lower-quadrant signals. Mechanical signals were installed at Gerhard's, Stewarts and Quakake to protect crossovers at those points. Controlled absolute electric block signals were placed at New Boston Junction and manual absolute block signals were installed at Mt. Carmel.

Visible and audible crossing signals were installed at nine highway crossings at grade and at three crossings visible features were added to the audible signals already in service.

New telegraph and telephone pole lines were erected for a distance of 1.50 miles on the New Jersey and Lehigh Division, .33 mile on the Mahanoy and Hazleton Division, 5.70 miles on the Auburn Division and .35 mile on the Buffalo Division. Telegraph and telephone lines were rebuilt for a distance of 1.58 miles on the New York Division, 14.65 miles on the New Jersey and Lehigh Division, 10.65 miles on the Wyoming Division, one mile on the Auburn Division and 22.35 miles on the Buffalo Division. Poles were reset for a distance of 38.55 miles on the New Jersey and Lehigh Division and 18.30 miles on the Wyoming Division.

## FINANCIAL

To provide cash funds for the retirement of \$2,000,000 Elmira, Cortland and Northern Railroad Company Five and Six Per Cent. Bonds, which matured April 1, 1914, the purchase of additional equipment and the prosecution of needed improvements to the property, your Company issued, under its General Consolidated Mortgage dated September 30, 1903, \$10,000,000 Four and One-half Per Cent. Gold Bonds, maturing May 1, 2003, which were sold and the proceeds used or will be used for the purposes stated. The mortgage in question provides for the issuance of bonds bearing interest at such rate as the Company may, from time to time, determine, up to but not exceeding five per cent. per annum. Although previous issues of bonds under that mortgage have been at the interest rate of four per cent., after careful reflection by the Board of Directors, it was deemed advisable to have the above issue bear interest at the rate of four and one-half per cent. per annum, in view of the existing condition of the market for railroad securities.

These \$10,000,000 bonds represent the only new capital obligations issued and sold by your Company to provide it with funds for capital expenditures since the sale to stockholders, in 1910, of 403,338 shares of capital stock at par, which produced funds of \$20,166,900. Since then, viz., July 1, 1910, the Company has made capital expenditures (referred to in the yearly reports) for the retirement of obligations in the hands of the public, acquisition of new property and improvements to existing property, as follows:—

## SECURITIES IN HANDS OF PUBLIC RETIRED:—

## Bonds:—

Lehigh Valley Railroad Company Second Mortgage 7% .....	\$6,000,000.00
Lehigh Valley Railroad Company Collateral Trust 4% (matured) .....	4,000,000.00
Lehigh Valley Railroad Company Collateral Trust 4% (purchased) .....	1,255,592.89
Elmira, Cortland and Northern Railroad Company First Mortgage Preferred 6% ..	750,000.00
Elmira, Cortland and Northern Railroad Company First Mortgage 5% .....	1,250,000.00
Equipment Trust, Series J, Certificates 4½% ..	2,000,000.00
	\$15,255,592.89

## Capital Stock Guaranteed by Lehigh Valley Railroad Company:—

Morris Canal and Banking Company Preferred 10% .....	\$1,476,917.65
Morris Canal and Banking Company Consolidated 4% .....	472,027.12
	1,948,944.77
Real Estate Mortgage .....	115,000.00

## EXPENDITURES FOR PROPERTY:—

Construction Hays Creek and Buck Mountain Branches....	1,069,889.74
New property and additions and betterments chargeable to Capital Accounts of Lehigh Valley Railroad and subsidiary companies .....	9,911,766.73
Rolling stock and floating equipment .....	12,028,267.86

Total July 1, 1910, to June 30, 1914, inclusive .....	\$40,329,461.99
Proceeds of increase in capital stock in 1910 .....	20,166,900.00

Balance .....

\$20,162,561.99

From the foregoing it will be observed that up to the close of the present fiscal year the Company has expended \$20,162,561.99 in excess of the funds raised by the increase in the capital stock. That portion of the funds representing this balance, not derived from the sale of the \$10,000,000 of bonds referred to, has been provided out of the cash resources of the Company.

The following capital obligations of your Company matured and were retired during the year:—

DESCRIPTION	INTEREST RATE	MATURITY	AMOUNT
Collateral Trust Bonds .....	4%	Feb. and Aug.	\$1,000,000
Equipment Trust, Series I, Certificates ..	4%	September	400,000
Equipment Trust, Series J, Certificates ..	4½%	Mar. and Sept.	500,000
Equipment Trust, Series K, Certificates ..	4%	Mar. and Sept.	300,000
Elmira, Cortland and Northern Railroad Company Bonds:—			
First Mortgage Preferred .....	6%	April	750,000
First Mortgage .....	5%	April	1,250,000

Total .....

\$4,200,000

An Equipment Trust, designated Series L, was created during the year, under which were issued \$2,400,000 Four and One-half Per Cent. Certificates, maturing in semi-annual installments April 1st and October 1st, each year, the final maturity being October 1, 1919. \$200,000 matured April 1st and the remainder, \$2,200,000, have been placed in the treasury and are available for sale or other disposition as occasion may require. This trust is a

lien upon one thousand self-clearing double hopper steel coal cars of 100,000 pounds capacity each, one thousand steel underframe box cars of 80,000 pounds capacity each and twenty-five freight locomotives.

An additional Equipment Trust, known as Series M, covering the issue of \$1,800,000 Four and One-half Per Cent. Certificates, was also authorized and will be a lien upon one thousand self-clearing double hopper steel coal cars of 100,000 pounds capacity each, sixty-five steel passenger coaches, twenty-five steel baggage and express and ten steel smoking cars. This equipment is now under construction and delivery will be completed in the near future, at which time the certificates will be executed and placed in the treasury. These certificates will mature in annual installments of \$200,000 on March 1st each year, commencing March 1, 1915, the last installment falling due March 1, 1923.

The advances made by the Lehigh Valley Railroad Company to subsidiary companies, of which it owns the entire capital stock, were reimbursed by the issuance of Fifty-Year Five Per Cent. Gold Debentures, as follows:

The Lehigh Valley Rail Way Company.....	\$3,000,000
Lehigh Valley Railroad Company of New Jersey.....	275,000
Lehigh Valley Transportation Company.....	175,000
Pennsylvania and New York Canal and Railroad Company...	135,000
National Storage Company.....	35,000
Easton and Northern Railroad Company.....	18,000
Montrose Railroad Company.....	3,000

These securities, with the exception of those issued by the Montrose Railroad Company which are in your treasury, have been deposited with the Trustee as required by the terms of the General Consolidated Mortgage. Included in the advances to The Lehigh Valley Rail Way Company, for which \$3,000,000 of debentures as above were received, is the sum of \$2,000,000 which was used to retire a like amount of bonds of the Elmira, Cortland and Northern Railroad Company which matured April 1, 1914, that company having been merged with The Lehigh Valley Rail Way Company in February, 1905.

There have also been received and placed in the treasury of your Company \$30,000 Wyoming Valley Water Supply Company First Mortgage Five Per Cent. Bonds, in reimbursement of advances made to that company for capital expenditures.

The account "Advances to Subsidiary Real Estate Companies" shows an increase of \$117,020.74 over the preceding year, due to additional real estate acquired for terminal and other improvements.

The charter of the Penn Haven Junction and Glen Onoko Railroad Company, organized in 1902 to project a branch line from Penn Haven Junction to Glen Onoko, was allowed to lapse, as there was no further necessity for maintaining that corporation. The nominal amount of capital stock issued has been written off the books.

In accordance with the practice in preceding years the book value of the capital stock of Cox Brothers & Company, Incorporated, has been reduced by the sum of \$1,000,000, Profit and Loss having been charged with that amount.

Materials and Supplies on hand at the close of the year amounted to \$3,373,260.78, a decrease of \$492,084.99.

Working Assets are \$33,077,353.61 in excess of Working Liabilities.

Semi-annual dividends of five per cent. each on the preferred and common capital stocks of the Company were declared in December, 1913, payable in January, 1914, and quarterly dividends of two and one-half per cent. each were declared in March and June, 1914, payable in April and July, 1914, respectively.

Certified public accountants have verified the cash and security balances of the Company for the year and furnished a certificate as to the correctness of the same, which is given on page 21.

#### GENERAL REMARKS

The Company has experienced a sharp decline in its earnings for the year under review from practically all sources of revenue as a result of the general business depression throughout the country. In addition, the earnings from the transportation of anthracite coal have been adversely affected by dull trade conditions in that commodity incident to the exceptionally mild winter, particularly in the Northwest. Some reduction was effected in the operating expenses, but with the high rates of wages paid and high prices of all commodities required in railroad operation it was impossible to reduce expenses proportionately to the falling off in earnings. The increase due to compliance with the so-called "Full Crew Laws" of the States through which your Company's lines pass and the increase granted labor amounted to approximately \$375,000 for the year. All work not immediately necessary for safety and economy of operation or to maintain the property in its usual high state of efficiency, together with such improvements and extensions as could be deferred, has, of course, been suspended until general business improves.

In order to establish a closer relationship in the operation of the Lehigh Valley Railroad Company of New Jersey, which is owned by your Company, it was deemed advisable to effect a lease of the property and appurtenances of the New Jersey Company. Accordingly, by proper action of both Companies and with the approval of the Board of Public Utility Commissioners of New Jersey, a lease has been consummated for a term of ninety-nine years from July 1, 1914, the consideration being the cost of maintenance, taxes, the payment of interest on all bonded and other indebtedness and providing also for reimbursement, by the issue of securities to your company, for amounts expended for additions and betterments to the property.

The Lehigh Valley Transportation Company, the entire capital stock of which is owned by your Company, has fully maintained its floating equipment and has, in fact, added to the same during the year by the purchase of one steel tug, one steam lighter, one steel car float, two steam hoisting barges, five covered refrigerator barges, five covered house barges and five open lighters equipped with gasoline hoists. In addition to the above, five covered house barges were ordered but have not as yet been delivered. One covered barge was converted into a cattle boat, one fuel lighter was sold, and nine barges, unfit for further service, were condemned and sold. The inventory of equipment on page 48 shows in detail the floating equipment used by your Company and its affiliated companies.

Thus far the Legislature of the State of New Jersey has failed to pass any bill which would relieve the Company from the necessity of operating the Morris Canal and settle the various matters in dispute with the State, although every effort has been made in that direction by your Company. Further efforts to bring about a satisfactory adjustment of the points at issue are being made.

Your Company entered into a contract with the American Express Company covering the handling of express business over your lines beginning July 1, 1914, the United States Express Company, which formerly handled this business, having served notice terminating its contract with your Company, effective June 30, 1914.

A loss of \$199,598.04 for the year was experienced in the operation of the Lehigh and New York Railroad under the lease made in 1895.

Fifty-nine new industries were located on the system during the year, of which forty-nine have direct track connections with your Company's lines.

There were no fatalities to the 5,729,042 passengers carried during the year, resulting from a train accident. There has further been a very gratifying decrease in the injuries to employees as a result of the Safety Committee work conducted by the Company and its men.

The total payments direct to labor for the year amounted to \$17,120,151.82, or 56.30 per cent. of the total operating expenses, including outside operations, the same having been distributed among an average of 22,017 employees. Your Company contributed \$59,677.13 to its Employees' Relief Fund.

Mr. Morris L. Clothier, of Philadelphia, and Mr. William P. Clyde, of New York, were elected Directors to fill the vacancies caused by the resignations of Mr. George F. Baer and Mr. Charles Steele.

The Directors thank the officers and employees for their faithful and efficient services rendered during the year.

F. B. THOMAS,  
President.

#### COMPARATIVE INCOME ACCOUNT FOR THE YEARS ENDED JUNE 30, 1914 AND 1913

	1914	1913	INCREASE OR DECREASE
OPERATING REVENUES:—			
Coal freight revenue.....	\$18,492,683.35	\$20,385,389.09	—\$1,892,705.74
Merchandise freight revenue.....	15,026,684.11	16,339,748.97	—1,313,064.86
Passenger revenue.....	4,795,147.44	4,867,554.03	—72,406.59
Mail revenue.....	195,052.87	191,821.11	3,231.76
Express revenue.....	443,971.75	506,191.11	—62,219.36
Other transportation revenue..	478,453.44	415,731.71	62,721.73
Miscellaneous revenue.....	351,570.99	336,935.87	14,635.12
Total operating revenues..	\$39,783,563.95	\$43,043,371.89	—\$3,259,807.94

OPERATING EXPENSES:—			
Maintenance of way and structures .....	\$4,575,061.96	\$5,694,422.24	—\$1,119,360.28
Maintenance of equipment...	7,011,946.34	7,561,270.87	—549,324.53
Traffic expenses .....	1,002,872.11	982,857.66	20,014.45
Transportation expenses.....	14,071,182.70	13,993,617.35	77,565.35
General expenses.....	948,098.72	875,651.45	72,447.27
Total operating expenses..	\$27,609,161.83	\$29,107,819.57	—\$1,498,657.74

Ratio of operating expenses to operating revenues....	69.40%	67.62%	1.78%
Net operating revenue....	\$12,174,402.12	\$13,935,552.32	—\$1,761,150.20
OUTSIDE OPERATIONS, NET....	*280,244.11	*280,210.32	—33.79

TOTAL NET REVENUE.....	\$11,894,158.01	\$13,655,342.00	—\$1,761,183.99
RAILWAY TAX ACCRUALS.....	1,549,895.38	1,447,205.04	102,690.34
OPERATING INCOME.....	\$10,344,262.63	\$12,208,136.96	—\$1,863,874.33

OTHER INCOME:—			
Hire of equipment—Balance.	\$327,655.51	\$286,732.93	\$40,922.58
Joint facility rent income....	402,957.70	416,543.34	—13,585.64
Dividend income.....	†1,241,034.58	666,123.10	574,911.48
Income from funded securities	423,060.00	382,314.16	40,745.84
Miscellaneous income.....	469,564.64	552,041.07	—82,476.43
Total other income.....	\$2,864,272.43	\$2,303,754.60	\$560,517.83
TOTAL INCOME.....	\$13,208,535.06	\$14,511,891.56	—\$1,303,356.50

DEDUCTIONS FROM INCOME:—			
Interest deductions for funded debt .....	\$3,308,428.49	\$3,127,360.15	\$181,068.34
Deductions for lease of other roads .....	2,212,420.00	2,239,295.00	—26,875.00
Joint facility rent deductions.	210,322.40	167,062.33	43,260.07
Miscellaneous tax accruals...	141,346.09	161,946.35	—20,600.26
Miscellaneous deductions....	279,358.39	54,399.51	224,958.88
Total deductions from income	\$6,151,875.37	\$5,750,063.34	\$401,812.03

NET INCOME.....	\$7,056,659.69	\$8,761,828.22	—\$1,705,168.53
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\*Deficit.

†Includes dividend of \$685,080.00 on stock of Temple Iron Co.

#### PROFIT AND LOSS ACCOUNT FOR THE YEAR ENDED JUNE 30, 1914.

	Dr.	Cr.
Balance, July 1, 1913.....		\$25,066,231.42
Net income for year ended June 30, 1914.....		7,056,659.69
Reduction of book value of capital stock of Cox Brothers & Co., Inc.....	\$1,000,000.00	
Discount on general consolidated mortgage bonds sold .....	1,000,000.00	
Property abandoned .....	78,492.83	
Miscellaneous adjustments.....	84,914.53	

Dividends:		
Five per cent. on preferred stock, paid Jan. 10, 1914.....	\$5,315.00	
Five per cent. on common stock, paid Jan. 10, 1914.....	3,025,085.00	
Two and one-half per cent. on preferred stock, paid April 11, 1914 .....	2,657.50	
Two and one-half per cent. on common stock, paid April 11, 1914.....	1,512,542.50	
Two and one-half per cent. on preferred stock, due July 11, 1914 .....	2,657.50	
Two and one-half per cent. on common stock, due July 11, 1914.....	1,512,542.50	
	6,060,800.00	
Balance, June 30, 1914.....	23,898,683.75	
	\$32,122,891.11	\$32,122,891.11

Balance brought forward, July 1, 1914.....	\$23,898,683.75
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## GENERAL BALANCE SHEET, JUNE 30, 1914.

Dr.	ASSETS.	Cr.	LIABILITIES
<b>ROAD AND EQUIPMENT:—</b>		<b>CAPITAL STOCK:—</b>	
Investment to June 30, 1907.....	\$54,365,714.13	1,210,034 shares common stock, par \$50....	\$60,501,700.00
Investment since June 30, 1907.....	24,065,602.97	2,126 shares preferred stock, par \$50....	106,300.00
	\$78,431,317.10		\$60,608,000.00
Less reserve for accrued depreciation.....	7,167,563.18	<b>*FUNDED DEBT:—</b>	
	\$71,263,753.92	Mortgage bonds.....	\$77,639,000.00
<b>SECURITIES:—</b>		Collateral trust bonds.....	12,000,000.00
Securities of proprietary, affiliated, and controlled companies—pledged.....	\$35,717,451.58	Equipment trust obligations.....	6,200,000.00
Securities of proprietary, affiliated, and controlled companies—unpledged.....	3,978,432.83	Mortgage on real estate.....	1,669.18
	39,695,884.41		95,840,669.18
<b>OTHER INVESTMENTS:—</b>		<b>WORKING LIABILITIES:—</b>	
Advances to proprietary, affiliated, and controlled companies for construction, equipment and betterments.....	\$211,036.79	Traffic and car-service balances due to other companies.....	\$29,681.68
Real estate.....	479,785.99	Audited vouchers and wages unpaid.....	2,985,982.79
Advances to subsidiary real estate companies.....	3,325,381.40	Miscellaneous accounts payable.....	182,702.14
Securities—pledged.....	26,911,855.93	Matured interest, dividends and rents unpaid.....	413,396.75
Securities—unpledged.....	8,424,332.93	Other working liabilities.....	462,822.35
	39,352,393.04		4,074,585.71
<b>WORKING ASSETS:—</b>		<b>ACCRUED LIABILITIES NOT DUE:—</b>	
Cash.....	\$11,020,820.79	Unmatured interest and rents payable.....	\$933,041.33
Securities issued or assumed—held in treasury.....	18,711,000.00	Dividends declared June 17, due July 11, 1914.....	1,515,200.00
Marketable securities.....	325,000.00	Taxes accrued.....	505,778.60
Traffic and car-service balances due from other companies.....	198,666.03		2,954,019.93
Net balance due from agents and conductors.....	804,100.06	<b>DEFERRED CREDIT ITEMS:—</b>	
Miscellaneous accounts receivable.....	2,556,328.63	Other deferred credit items.....	2,930,110.21
Materials and supplies.....	3,373,260.78	<b>PROFIT AND LOSS.....</b>	23,898,683.75
Other working assets.....	162,763.03		
	37,151,939.32		
<b>ACCRUED INCOME NOT DUE:—</b>			
Unmatured interest, dividends and rents receivable.....	233,149.97		
<b>DEFERRED DEBIT ITEMS:—</b>			
Advances.....	\$1,116,597.55		
Rents and insurance paid in advance.....	147,007.58		
Other deferred debit items.....	1,345,342.99		
	2,608,948.12		
<b>TOTAL ASSETS.....</b>	<b>\$190,306,068.78</b>	<b>TOTAL LIABILITIES.....</b>	<b>\$190,306,068.78</b>

\*\$18,711,000.00 held in the treasury of the Company.

## THE LEHIGH VALLEY COAL COMPANY

## REPORT OF OPERATIONS

PHILADELPHIA, August 12, 1914.

The annual report of the operations conducted by The Lehigh Valley Coal Company for the fiscal year ended June 30, 1914, and statements indicating its financial condition at the close of the year, are herewith submitted.

The total net income of the Company from all sources, after deducting charges for royalties, sinking funds, depreciation of the property and interest on the funded debt, amounted to \$564,859.44, a decrease of \$906,415.43 as compared with the preceding year. The shrinkage in the net earnings of the Company is due almost entirely to the restricted demand for anthracite coal as a result of the mild winter. This not only reduced the profits by reason of the smaller volume of business done, but also added materially to the cost per ton of mining such coal as was shipped.

The production of anthracite coal from the lands owned and leased by The Lehigh Valley Coal Company, including that mined by tenants, was 7,877,390 gross tons, a decrease of 982,642 tons.

The percentage of sizes above pea produced by the mining operations of the Company was 66.46 per cent., a decrease of 2.22 per cent.

The number of breaker hours worked was 41,218, a decrease of 5,796 hours.

Mining operations conducted on the Snow Shoe lands, located in Centre County, Pennsylvania, produced 252,731 gross tons of bituminous coal, a decrease of 97,373 tons.

Ample expenditures have been made to fully maintain the property of your Company. Additions and betterments amounting to the sum of \$344,785 were made during the year.

The new breaker at Franklin Colliery, referred to in the last annual report, has been completed and is now in successful operation. In connection therewith certain improvements have been made in outside operating conditions to minimize the danger of fire.

Additions have been made to the pumping plants at Prospect and Dorrance Collieries and certain changes and improvements effected in the methods to enable the flowing of silt into the mines. These expenditures were necessary to comply with legislative enactments regarding the pollution of streams in that vicinity.

In order to provide for additional pumping at Exeter Colliery, a substantial addition has been made to the steam plant by the installation of high pressure boilers to replace old-fashioned return tubular boilers installed many years ago. The boiler plant at Heidelberg Colliery has also been renewed and improved.

The developments at Park Colliery have been continued throughout the year in order to place the colliery on a better operating basis and conditions are now becoming more satisfactory. The unwatering of the old workings at the western end of the property, so that mining can be undertaken in that territory, is under way.

Extensive renewals and improvements to Centralia Breaker have been made during the year in order to maintain its efficiency and modernize its methods.

The erection of the washery at Springdale for the purpose of re-working the culm banks on the Delano lands has been completed and it is now in operation.

The shaft at Blackwood Colliery has been sunk so that mining can be conducted on a lower level and, upon the completion of the necessary tunnels and gangways, operating conditions at that colliery will be improved.

At all collieries very considerable sums have been expended to reduce the fire risks and safeguard the lives of employees.

The prospecting done on the Snow Shoe property has demonstrated that there is sufficient coal in the lower or "A" vein to warrant the construction of a plant to mine the same. Accordingly an expenditure was authorized to carry on the necessary construction work and the same is now under way.

The leases with the Girard Estate, under which your Company has for many years been conducting operations at the Packer and Continental Collieries, expired by limitation December 31, 1913. After protracted negotiations a renewal was effected for a further period of fifteen years—the maximum term that could be obtained—but at higher rates of royalty than those paid heretofore. Owing to the uncertainty with respect to the renewal of these leases various contemplated improvements and development work on the property had been held in abeyance until the question of renewal was definitely settled. As soon as the new leases were executed, expenditures were authorized and work is now under way for the construction of a new steel fireproof breaker at Packer No. 5 Colliery and extensive alterations and betterments at Packer No. 4. Many important underground developments and mining improvements are also being prosecuted. These expenditures will place the operations at the Packer Collieries on the most scientific and economical basis possible and are the more necessary because of the high rates of royalty which the Company is required to pay under the new leases.

The general offices of the Company have for a long time been located in rented quarters in the City of Wilkes-Barre, an arrangement which of late years has been very unsatisfactory because of the growth of the Company. The space occupied was utterly inadequate, and failed to provide proper facilities for the storage of the very valuable maps and records and prevent their destruction in case of fire. The Company has, therefore, erected a modern office building, of fireproof construction, on North River Street, Wilkes-Barre, with sufficient space, not only for its present needs but also for future requirements. The building was completed and occupied before the close of the fiscal year.

The tax assessments upon the property and business of your Company increased very heavily in recent years. The taxes for the fiscal year under review are approximately twenty-five per cent. greater than the preceding year. This does not include the special tax levied by the State of Pennsylvania of two and one-half per cent. of the value of the coal mined. The question of the constitutionality of the law imposing this tax is now before the courts for determination.

The Company has issued no new capital obligations during the year. In fact, the obligations appearing on the balance sheet as "Deferred Real Estate Payments," representing short term notes given for the purchase of property in prior years, have been reduced by the sum of \$100,000.

Payments, amounting to \$111,136, were made to the sinking funds of the various mortgages on the Company's property.

Current Assets are \$2,543,103 in excess of Current Liabilities. The books and accounts of the Company have been verified by certified public accountants and a copy of the certificate as to the correctness thereof is appended.

F. M. CHASE,  
Vice President and General Manager.

LEHIGH VALLEY COAL COMPANY PROFIT AND LOSS ACCOUNT  
FOR THE YEAR ENDED JUNE 30, 1914.

	Dr.	Cr.
Credit balance, July 1, 1913.....		\$3,714,239.01
Net income for year ended June 30, 1914....		564,859.44
Miscellaneous adjustments.....	\$ 53,413.17	
Balance, June 30, 1914.....	4,225,685.28	
	\$4,279,098.45	\$4,279,098.45
Credit balance brought forward, July 1, 1914.....		\$4,225,685.28

## CANADIAN PACIFIC RAILWAY COMPANY

## THIRTY-THIRD ANNUAL REPORT

OF THE

DIRECTORS OF THE CANADIAN PACIFIC RAILWAY COMPANY.

YEAR ENDED JUNE 30TH, 1914.

## To the Shareholders.

The accounts of the Company for the year ended June 30th, 1914, show the following results:—

Gross Earnings .....	\$129,814,823.83
Working Expenses .....	87,388,896.15
Net Earnings .....	\$ 42,425,927.68
Deduct Fixed Charges: .....	10,227,311.17
Surplus .....	\$ 32,198,616.51
Contribution to Pension Fund .....	125,000.00
	\$ 32,073,616.51

Deduct Net Earnings of Pacific Coast Steamships, Commercial Telegraph, and News Department, transferred to Special Income Account .....	2,115,842.15
	\$ 29,957,774.36

From this there has been charged a half yearly dividend on Preference Stock of 2 per cent., paid April 1st, 1914.....	\$1,545,026.80
And three quarterly dividends on Ordinary Stock of 1¼ per cent. each, paid January 2nd, 1914, April 1st, 1914, and June 30th, 1914 .....	12,600,000.00
	14,145,026.80
	\$ 15,812,747.56

From this there has been declared a second half yearly dividend on Preference Stock, payable October 1st, 1914.....	\$1,564,493.46
And a fourth quarterly dividend on Ordinary Stock of 1¼ per cent., payable October 1st, 1914.....	4,550,000.00
	6,114,493.46

Leaving net surplus for the year.....\$ 9,698,254.10

In addition to the above dividends on Ordinary Stock, three per cent. was paid from Special Income.

## THE FOLLOWING ARE THE DETAILS OF SPECIAL INCOME FOR YEAR ENDED JUNE 30TH, 1914.

Balance at June 30th, 1913.....	\$3,358,941.93
Less Dividend paid October 1st, 1913.....	1,500,000.00
	\$1,858,941.93
Interest on Proceeds Land Sales to October 31st, 1913.....	492,136.05
Interest on Deposits and Loans.....	1,139,461.48
Interest from Minneapolis, St. Paul & Sault Ste. Marie Ry. Bonds .....	159,720.00
Interest from Mineral Range Ry. Bonds.....	50,160.00
Interest from Toronto, Hamilton & Buffalo Ry. Bonds.....	10,840.00
Interest from Dominion Government Bonds for half year.....	91,250.00
Interest from Ontario Government Bonds for half year.....	24,000.00
Interest from British Consols for half year.....	57,284.72
Interest from Montreal & Atlantic Ry. Bonds, and on other Securities .....	348,472.18
Interest from Berlin, Waterloo, Wellesley & Lake Huron Ry. Bonds .....	17,040.00
Interest from St. John Bridge & Ry. Extension Co. Bonds.....	5,437.50
Interest from Esquimalt & Nanaimo Ry. Bonds.....	193,280.00
Interest from Dominion Atlantic Ry. Extension Debenture Stock .....	50,068.27
Interest from Dominion Atlantic Ry. 2nd Debenture Stock.....	36,986.67
Dividend on Esquimalt & Nanaimo Ry. Stock.....	125,000.00
Dividend on St. John Bridge & Ry. Extension Co. Stock.....	70,000.00
Dividends on Dominion Express Co. Stock.....	200,000.00
Dividends on Minneapolis, St. Paul & S.S.M. Ry. Common Stock .....	890,645.00
Dividends on Minneapolis, St. Paul & S.S.M. Ry. Preferred Stock .....	445,326.00
Dividends on West Kootenay Power & Light Co. Common Stock .....	52,250.00
Dividends on West Kootenay Power & Light Co. Preferred Stock .....	3,850.00
Dividends on Toronto, Hamilton & Buffalo Ry. Stock.....	57,012.00
Dividends on Consolidated Mining & Smelting Co. Stock.....	140,912.00
Dividend on Berlin, Waterloo, Wellesley & Lake Huron Ry. Stock .....	12,500.00
Earnings from Ocean Steamships.....	783,677.93
Revenue from Company's interest in Coal Mine Properties.....	294,857.17
Cash Proceeds from Townsites Sales.....	550,303.49
Net Earnings of Pacific Coast Steamships, Commercial Telegraph, News Department and Hotels.....	2,134,255.21
Received for space rented in Office Buildings.....	151,144.86
	\$10,446,812.46

## Less:—Payments to Shareholders in dividends:

January 2nd, 1914, April 1st, 1914, and June 30th, 1914 .....	\$ 5,400,000.00
	\$ 5,046,812.46

From this a dividend has been declared, payable October 1st, 1914 .....

2. The working expenses for the year amounted to 67.32 per cent. of the gross earnings, and the net earnings to 32.68 per cent., as compared with 66.82 and 33.18 per cent. respectively in 1913.

3. Four per cent. Consolidated Debenture Stock to the amount of £2,065,119 was created and sold, and of the proceeds the sum of £239,000 was applied to the construction of authorized branch lines, and £1,826,119 was devoted to the acquisition of the securities of other railway companies whose lines constitute a portion of your system, the interest on which had, with your sanction, been guaranteed by your Company.

4. Four per cent. Preference Stock to the amount of £800,000 was created and sold for the purpose of meeting capital expenditures that had previously been sanctioned by you.

5. Your guarantee of interest was endorsed on the Four per cent. Con-

solidated Bonds of the Minneapolis, St. Paul and Sault Ste. Marie Railway Company, to the amount of \$1,947,000 issued and sold to cover the cost of 97.35 miles of railway added to that company's system.

6. During the year 259,371 acres of agricultural land were sold for \$4,618,420, being an average of \$17.80 per acre. Included in this area there were 6,318 acres of irrigated land which brought \$66.93 per acre, so that the average price of the balance was \$16.57 per acre.

7. To give effect to an agreement with the City of Toronto, and to an order of the Board of Railway Commissioners requiring the railway companies to provide a Union Passenger Station and Joint Terminals commensurate with the passenger traffic of the City, and to eliminate grade crossings by the elevation of their tracks in the Joint Terminals on the water front, the Toronto Terminals Railway Company has been organized with the sanction of Parliament, and a contract has been made between your Company, the Grand Trunk Railway Company of Canada, and the Toronto Terminals Railway Company, for the construction and operation of the Union Passenger Station and Terminals, which fixes the rental to be paid by each company for the use of the facilities at five per cent. per annum on one half the amount of the Terminals Railway Company securities outstanding at any time, provides for the joint and several guarantee by your Company and the Grand Trunk Railway Company of Canada of the payment both as to principal and interest of the said securities, and establishes the basis on which the expense of operating the station and terminals shall be divided between the companies. The Dominion Government and the City of Toronto will participate in the expense of carrying out these works on a basis to be determined by agreement between the parties, or to be settled by the Railway Commissioners of Canada, but it is estimated that the portion of the cost to be borne by the Terminals Company will be approximately \$12,000,000. The contract will be submitted for your consideration and approval.

8. An agreement has been reached between the Kettle Valley Railway Company and the Vancouver, Victoria & Eastern Railway Company, covering the use, by the latter company for its trains, of the Kettle Valley line between Otter Summit and Hope, a distance of about 54 miles, and for the like use by the Kettle Valley Company of the Vancouver, Victoria & Eastern Company's line between Princeton and Otter Summit, a distance of about 38 miles, all in British Columbia. In each case the lessee undertakes to pay a rental equal to two and one-half per cent. per annum on the cost of the other company's line used in common, and its proportion of the cost of maintenance. By this means the unnecessary duplication of 92 miles of railway through a difficult country is avoided. Inasmuch as the Kettle Valley Railway Company has been leased to your company, your consent is required to make the arrangement effective, and therefore, the agreement will be submitted for your sanction.

9. A lease for 999 years of the Lake Erie & Northern Railway, extending from Port Dover on Lake Erie through Simcoe, Waterford, Brantford, and Paris, in Ontario, to a connection with your railway at Galt, a distance of approximately 51 miles, at an annual rental equivalent to the interest on bonds issued or to be issued by the Lake Erie and Northern Railway Company with the consent of your company, will be submitted for your approval. This line will provide access to territory that is not now served by your railway, and will at a later stage be equipped for operation by electricity, in connection with your Galt, Berlin and Waterloo branch.

10. There will be submitted for your consideration and approval a lease of the Southampton Railway from a point on the Gibson Branch of this Company's railway between Millville Station and the Railway Bridge crossing the Northeast Nackawick Stream to a point in the vicinity of the Pokiook Bridge in the County of York, all in the Province of New Brunswick, a distance of approximately 13 miles, for a term of ninety-nine years, on the basis of a rental of forty per cent. of the gross earnings as defined in the said proposed lease; a lease of that portion of the Fredericton and Grand Lake Coal and Railway from a point on the Intercolonial Railway at or near Gibson, in the County of York, to a point at or near Minto, in the County of Sunbury, to connect with the present line of the New Brunswick Coal and Railway, a distance of approximately 31 miles, for a term of nine hundred and ninety-nine years, on the basis of a rental of forty per cent. of the gross earnings as defined in the said proposed lease; and a lease from the Gleggarry and Stormont Railway Company of the whole of the Railway which that Company has been by law authorized to construct, whether constructed or to be constructed, from a point on this Company's railway at or near the station known as St. Polycarpe Junction, in the County of Soulanges in the Province of Quebec, to the Town of Cornwall, in the County of Stormont, in the Province of Ontario, a distance of approximately 27 miles, together with the appurtenances of the said railway, for a term of ninety-nine years from the date of completion of the said railway, on the basis of a rental of forty per cent. of the gross earnings and other terms more fully set out in the said proposed lease.

11. The capital expenditure of over \$60,000,000 for cars and locomotives in the years 1910-1913 was so very large that your Directors decided that it would be proper to spread the payments for this year's deliveries, about \$14,000,000, over a period of fifteen years, under the terms of an ordinary Equipment Trust Agreement, and, therefore, a contract was made with the Victoria Rolling Stock and Realty Company to provide the equipment and receive payment in 15 annual instalments, with interest at four and one-half per cent. per annum. All of the equipment has been delivered, and the cost has been advanced by your Company pending the sale of the Rolling Stock Company's bonds, when your Treasury will be recouped.

12. The accounts for the year show that \$35,571,959.97 had been advanced from your current funds to meet the cost of additional railway mileage and ocean steamers against which no securities have been issued or sold. In ordinary course, Four per cent. Consolidated Debenture Stock would have been utilized to meet this expenditure, but market conditions were not favourable to the sale of this security in large amounts without unduly depressing the market price.

In these circumstances your Directors decided to create a Special Investment Fund composed of the deferred payments on land sold, and securities in which land funds had been invested, to the amount of \$55,000,000, and to issue against this fund and the Company's credit ten-year Note Certificates to the amount of \$52,000,000, carrying interest at the rate of 6½ per annum, to be offered to the shareholders at 80% of their face value, thus providing all the money required for the present purposes of the Company, and at the same time giving the Shareholders participation in the proceeds of land sales to the amount of about \$10,000,000.

The issue was entirely successful. The Note Certificates, with interest, will be paid off in instalments without any encroachment on your revenue from traffic, and the Four per cent. Consolidated Debenture Stock can be marketed in such amounts and at such times as may be most advantageous. 13. Since the close of the last fiscal year First Mortgage 5% Bonds to the amount of only £64,700 or \$314,873.33 have been taken up and cancelled, because the holders were unwilling to surrender their bonds at a premium satisfactory to your Directors. The outstanding Bonds, amounting to £2,638,900 or \$12,842,646.67, will mature July 1st, 1915, and on or before that date they will be paid off and cancelled with funds set aside for the purpose.



14. As mentioned in the notice to Shareholders, the Annual General meeting will be made Special for the purpose of authorizing, if approved, an increase of the Company's Ordinary Capital Stock by the amount of \$75,000,000, namely, from \$260,000,000 to \$335,000,000, in order to make it accord with the amount for which the Company has the sanction of Government. Although with the curtailment of capital expenditure no necessity exists for issuing any additional Ordinary Stock at this time, and there will be no resumption of works requiring any large amount of money until a decided improvement in business conditions furnishes ample warrant, your Directors are convinced of the prudence of making provision at this time for your capital requirements covering a considerable period in the future. No portion of this increased amount will, of course, be issued by the Directors until the sanction of the Shareholders has been obtained at a Special General Meeting called for the purpose.

15. The death in January last of the Right Hon. Lord Strathcona and Mount Royal, G.C.M.G., was a source of sincere sorrow to your Directors. Lord Strathcona was one of the prominent founders of the Company, and he remained a member of the Board of Directors until the time of his death.

Your Directors also report with regret the death, in April of this year, of Sir William Whyte who had occupied a position of importance in the Company's affairs for many years. As Vice-President in charge of the Company's interests West of Lake Superior he proved himself a most capable and useful officer, and on his retirement from active service in 1911 he became a member of the Board of Directors.

Mr. A. M. Nanton of Winnipeg has been elected a Director in place of the late Sir William Whyte. The vacancy caused by the death of Lord Strathcona has not as yet been filled.

16. As foreshadowed at the last Annual Meeting, the General Balance Sheet has been recast so as to show in more specific form the active and inactive assets of the Company. In the schedule of these assets which appears in the Annual Report the estimated value per acre of the unsold agricultural lands has been placed at lower figures than had been mentioned, in order that it might be quite on the safe side, but your Directors and the officers of the Land Department are satisfied that your unsold lands will

eventually command much higher average prices per acre than those given in the schedule.

The values fixed for the townsites and other lands and properties available for sale are on a conservative basis, and the active assets taken into the schedule at cost could be readily disposed of at figures very much higher than those given.

17. Some years ago, for the purpose of securing access to the State of Washington and other important territory in the North Western United States, the Company entered into a working arrangement with the Spokane International Railway Company, extending from Kingsgate, on the line of your railway in British Columbia, to Spokane, Washington, a distance of 141 miles, with branch lines 22 miles in length. The volume of traffic secured to your lines by this connection has become so important that a more permanent arrangement is very desirable. Your Directors have not as yet decided whether this could be best accomplished by the acquisition of the Capital Stock of the Spokane International Railway Company, by a guarantee of interest on its bonds or by some other means, and therefore they will ask your authority to exercise their discretion in carrying out such a transaction for closer and more permanent relations with the Spokane International Railway Company as may appear to be most desirable in your interest.

18. The net revenue of the Commercial Telegraph System, Pacific Coast Steamers, and News Department, that in previous years had been incorporated in the revenue of the railway, is deducted from the surplus shown in the Revenue Statement this year and transferred to Special Income Account.

19. The undermentioned Directors will retire from office at the approaching Annual Meeting. They are eligible for re-election:—

Sir Thomas G. Shaughnessy, K.C.V.O.

Sir Thomas Skinner, Bart.

For the Directors,

T. G. SHAUGHNESSY,

President.

MONTREAL, August 10th, 1914.

### GENERAL BALANCE SHEET, JUNE 30TH, 1914.

ASSETS.		LIABILITIES.	
<b>PROPERTY INVESTMENT:</b>		<b>CAPITAL STOCK:</b>	
Railway .....	\$338,084,064.89	Ordinary Stock .....	\$260,000,000.00
Rolling Stock Equipment.....	153,256,394.79	Four Per Cent. Preference Stock.....	78,224,673.03
Ocean, Lake, and River Steamships.....	24,171,162.30		\$338,224,673.03
	\$515,511,621.98	<b>FOUR PER CENT. CONSOLIDATED DEBENTURE STOCK .....</b>	
<b>ACQUIRED SECURITIES (Cost):</b>			173,307,470.09
Schedule "A" .....	107,867,740.63	<b>MORTGAGE BONDS:</b>	
<b>ADVANCES TO LINES AND STEAMSHIPS UNDER CONSTRUCTION .....</b>		Canadian Pacific Ry. 1st Mortgage 5 per cent. ....	\$12,842,646.67
	35,571,959.97	Algoma Branch 1st Mortgage 5 per cent..	3,650,000.00
<b>ADVANCES AND INVESTMENTS.....</b>			16,492,646.67
	12,330,195.22		52,000,000.00
<b>DEFERRED PAYMENTS ON LANDS AND TOWN-SITE SALES .....</b>			45,000,000.00
	4,140,413.83	<b>NOTE CERTIFICATES 6 PER CENT.....</b>	
<b>*SPECIAL INVESTMENT FUND:</b>			
Deferred Payments on Land and Town-sites .....	\$42,666,510.87	<b>PREMIUM ON ORDINARY CAPITAL STOCK SOLD.</b>	
Government Securities .....	10,088,734.86		
Deposited with Trustee.....	3,790,225.53	<b>CURRENT:</b>	
	56,545,471.26	Audited Vouchers .....	\$7,809,598.58
<b>WORKING ASSETS:</b>		Pay Rolls .....	5,177,754.16
Material and Supplies on Hand.....	\$17,686,235.53	Miscellaneous Accounts Payable.....	9,048,037.42
Agents and Conductors Balances.....	3,221,350.07		22,035,390.16
Net Traffic Balances.....	533,996.70	<b>ACCRUED:</b>	
Miscellaneous Accounts Receivable.....	10,511,665.82	Coupons due July 1st, 1914, and including Coupons overdue not presented.....	\$757,204.67
Cash in Hand.....	36,777,725.02	Rentals of Leased Lines.....	189,810.72
	68,730,973.14		947,015.39
<b>OTHER ASSETS:</b>		<b>EQUIPMENT OBLIGATIONS .....</b>	
Schedule "B" .....	133,022,494.74	Less Victoria Rolling Stock and Realty Co. Bonds on hand.....	13,630,000.00
	\$933,720,870.77		720,000.00
		<b>RESERVES AND APPROPRIATIONS:</b>	
		Equipment Replacement .....	2,491,518.64
		Steamship Replacement .....	6,682,068.87
		Reserve Fund for Contingencies.....	2,083,942.12
			11,257,529.63
		<b>NET PROCEEDS LANDS AND TOWNSITES.....</b>	
			66,771,271.19
		<b>SURPLUS REVENUE FROM OPERATION.....</b>	
			79,711,091.66
		<b>SURPLUS IN OTHER ASSETS.....</b>	
			127,253,782.95
			\$933,720,870.77

\*Security for issue of Note Certificates, \$52,000,000.

#### AUDITORS' CERTIFICATE.

We have examined the Books and Records of the Canadian Pacific Railway Co., for the fiscal year ending June 30, 1914, and having compared the annexed Balance Sheet and Income Account therewith, we certify that, in our opinion, the Balance Sheet is properly drawn up so as to show the

true financial position of the Company at that date, and that the relative Income Account for the year is correct.

PRICE, WATERHOUSE & CO.,  
Montreal, August 8th, 1914 Chartered Accountants (England).

I. G. OGDEN,  
Vice-President.

#### SCHEDULE "C"

DETAILS OF EXPENDITURE ON ADDITIONS AND IMPROVEMENTS FROM JULY 1ST, 1913, TO JUNE 30TH, 1914.

<b>EASTERN LINES:</b>	
Additional Sidings, Buildings, Stations and Yards .....	\$664,882.11
Permanent Bridges and Improvements of Line .....	1,164,100.35
Double Tracking .....	4,045,223.88
Right of Way.....	7,127.46
	\$5,881,333.80
<b>MONTREAL TERMINALS:</b>	
Windsor St. Station Extension.....	890,847.90
Double Track Bridge over St. Lawrence River .....	391,771.73
	128,923.90
<b>WESTERN LINES:</b>	
Additional Sidings, Buildings, Stations and Yards .....	\$1,329,064.58
Permanent Bridges and Improvements of Line .....	548,176.83
Fort William Terminals, including Coal-ing Plant .....	1,007,816.09
East Winnipeg Yard.....	1,456,849.78
Winnipeg New Elevator.....	203,178.78
Winnipeg Station and Hotel.....	1,255,926.24
Calgary Hotel .....	1,289,923.92
Vancouver Terminals .....	1,760,041.33
Double Tracking .....	7,549,677.45
Right of Way.....	8,993.04
	16,409,648.04

#### SCHEDULE "D"

DETAILS OF EXPENDITURES ON LEASED AND ACQUIRED LINES, FROM JULY 1ST, 1913, TO JUNE 30TH, 1914.

<b>NEW BRUNSWICK RAILWAY:</b>	
Additional Sidings, Buildings, Stations and Yards .....	\$132,483.38
Permanent Bridges and Improvements of Line .....	205,913.96
St. John Terminals.....	475,154.25
	\$813,551.59
<b>ATLANTIC &amp; NORTH WEST RAILWAY:</b>	
Additional Sidings, Buildings, Stations and Yards .....	93,186.36
Permanent Bridges and Improvements of Line .....	189,452.00
Double Tracking .....	268,650.79
	551,289.15
<b>MONTREAL &amp; OTTAWA RAILWAY:</b>	
Additional Sidings, Buildings, Stations and Yards .....	8,485.45
Permanent Bridges and Improvements of Line .....	42,973.06
	51,458.51

**MONTREAL & WESTERN RAILWAY:**

Additional Sidings, Buildings, Stations and Yards	7,033.37	
Permanent Bridges and Improvements of Line	27,901.53	
Account Purchase of Road	13,731.90	48,666.80

**ONTARIO & QUEBEC RAILWAY:**

Additional Sidings, Buildings, Stations and Yards	449,617.15	
Permanent Bridges and Improvements of Line	155,983.37	
Double Tracking	1,076,480.55	
Toronto Terminals	1,243,638.31	
Right of Way	7,650.65	2,933,370.03

**MANITOBA & NORTH WESTERN RAILWAY:**

Additional Sidings, Buildings, Stations and Yards	48,111.55	
Permanent Bridges and Improvements of Line	47,948.53	
Right of Way	1,956.09	98,016.17

**MANITOBA SOUTH WESTERN COLONIZATION RAILWAY:**

Additional Sidings, Buildings, Stations and Yards	19,348.52	
Permanent Bridges and Improvements of Line	22,355.58	41,704.10

**CALGARY & EDMONTON RAILWAY:**

Additional Sidings, Buildings, Stations and Yards	238,543.64	
Permanent Bridges and Improvements of Line	55,517.87	
Right of Way	709.38	294,770.89

**COLUMBIA & KOOTENAY RAILWAY:**

Additional Sidings, Buildings, Stations and Yards	2,596.14	
Permanent Bridges and Improvements of Line	944.50	3,540.64

**COLUMBIA & WESTERN RAILWAY:**

Additional Sidings, Buildings, Stations and Yards	6,024.28	
Permanent Bridges and Improvements of Line	182,145.17	
Right of Way	339.79	188,509.24

**NEW BRUNSWICK SOUTHERN RY.....****CAP DE LA MADELEINE RAILWAY.....****ST. MAURICE VALLEY RAILWAY.....****JOLIETTE & BRANDON RAILWAY.....****OTTAWA, NORTHERN & WESTERN RY.....****LINDSAY, BOBCAYGEON & PONTYPOOL RAILWAY.....****GEORGIAN BAY & SEABOARD RAILWAY.....****GUELPH & GODERICH RAILWAY.....****TILSONBURG, LAKE ERIE & PACIFIC RAILWAY.....****WALKERTON & LUCKNOW RAILWAY.....****GREAT NORTH WEST CENTRAL RY.....****NICOLA, KAMLOOFS & SIMILKAMEEN RAILWAY.....****KASLO & SLOCAN RAILWAY.....**

\$5,481,821.57

**STATEMENT OF EARNINGS FOR THE YEAR ENDED JUNE 30TH, 1914.**

From Passengers	\$ 32,478,146.58
" Freight	81,135,295.12
" Mails	1,132,714.91
" Sleeping Cars, Express, Telegraph and Miscellaneous.	15,068,667.22
Total	\$129,814,823.83

**STATEMENT OF WORKING EXPENSES FOR THE YEAR ENDED JUNE 30TH, 1914.**

Transportation Expenses	\$ 42,250,286.37
Maintenance of Way and Structures	16,426,582.05
Maintenance of Equipment	16,617,247.21
Traffic Expenses	3,626,612.08
Parlor and Sleeping Car Expenses	1,348,979.47
Expenses of Lake and River Steamers	1,183,397.40
General Expenses	4,322,103.93
Commercial Telegraph	1,613,687.64
Total	\$ 87,388,896.15

**STATEMENT OF SURPLUS INCOME ACCOUNT, JUNE 30TH, 1914.**

Balance at June 30th, 1913	\$77,597,100.36
Net Earnings of Railway	\$29,957,774.36
Special Income	8,587,870.53
	38,545,644.89
	116,142,745.25

Less: Dividends on Preference Stock paid October 1st, 1913, and April 1st, 1914	3,031,653.59
Dividends on Ordinary Stock paid October 1st, 1913, January 2nd, 1914, April 1st, 1914, and June 30th, 1914.	23,000,000.00
Discount on Issue of \$52,000,000 Six per cent. Note Certificates	10,400,000.00
	36,431,653.59
	\$79,711,091.66

From this there have been declared the dividends on Preference and Ordinary Stock payable October 1st, 1914, amounting to \$ 8,064,493.46

**APPROPRIATION FOR ADDITIONS AND IMPROVEMENTS.**

Balance at June 30th, 1913	\$17,912,996.41
Expended during year, included in Schedules "C" and "D," and written off Coal Mining and other properties	\$17,912,996.41

**TRAIN TRAFFIC STATISTICS—FOR TWELVE MONTHS ENDED JUNE 30TH, 1914 AND 1913.**

(Earnings of Lake and River Steamers not included in this Statement.)

	Year ended June 30th, 1914.	Year ended June 30th, 1913.	Increase or Decrease Amount or number.	Per Cent
<b>TRAIN MILEAGE.</b>				
Passenger trains	21,523,630	22,333,592	809,962	3.63
Freight trains	24,164,242	27,611,103	3,446,861	12.48
Mixed trains	1,890,364	1,888,095	2,269	.12
Total trains	47,578,236	51,832,790	4,254,554	8.21

**CAR MILEAGE.****PASSENGER.**

Coaches and P. D. and S. cars	106,852,513	110,347,054	3,494,551	3.17
Combination cars	2,904,782	3,206,048	301,266	9.40
Baggage, Mail and Express cars	47,355,009	46,677,110	677,899	1.45
Total Passenger cars	157,112,304	160,230,222	3,117,918	1.95

**FREIGHT.**

Loaded	526,194,125	581,397,285	55,203,160	9.49
Empty	169,768,349	165,627,992	4,140,357	2.50
Caboose	26,196,664	30,617,975	4,421,311	14.44
Total Freight cars	722,159,138	777,643,252	55,484,114	7.13

Passenger cars per Traffic Train Mile	6.71	6.62	.09	1.36
Freight cars per Traffic Train Mile	27.72	26.36	1.36	5.16

**PASSENGER TRAFFIC.**

Passengers carried (earning revenue)	15,449,849	15,298,048	151,801	.99
Passengers carried (earn. rev.) one mile	1,570,758,210	1,766,982,013	196,223,803	11.11
Passengers carried (earn. rev.) one mile per mile of road	132,825	155,451	22,626	14.56
Average journey per passenger miles	101.67	115.51	13.84	11.98
Average amount received per passenger	2.06	2.28	.22	9.65
Average amount received per passenger mile	2.03	1.97	.05	3.05
Average number of passengers per train mile	67.09	72.95	5.86	8.03
Average number of passengers per car mile	14.31	15.56	1.25	8.03
Revenue from passengers per passenger car mile	29.05	30.72	1.67	5.44
Total passenger train earnings per train mile	1.69	1.75	.06	3.43
Total passenger train earnings per mile of road	3,345.11	3,724.92	379.81	10.20

**FREIGHT TRAFFIC.**

Tons of revenue freight carried one mile	10,601,426,321	11,242,690,998	641,264,677	5.70
Tons of non-revenue freight carried one mile	1,497,306,046	1,743,928,157	246,622,111	11.14
Total tons (all classes) freight carried one mile	12,098,732,367	12,986,619,155	887,886,788	6.84
Tons of revenue freight carried one mile per mile of road	896,470	989,081	92,611	9.36
Tons of non-revenue freight carried one mile per mile of road	126,514	153,423	26,809	17.47
Total tons (all classes) freight carried one mile per mile of road	1,023,084	1,142,504	119,420	10.45
Average amount received per ton per mile of revenue freight	0.753	0.784	.031	3.95
Average No. of tons of revenue freight per train mile	406.89	381.12	25.77	6.76
Average No. of tons of non-rev. freight per train mile	57.47	59.12	1.65	2.79
Average No. of tons of (all classes) freight per train mile	464.36	440.24	24.12	5.48
Average No. of tons of revenue freight per loaded car mile	20.15	19.34	.81	4.19
Average No. of tons of non-rev. freight per loaded car mile	2.84	3.00	.16	5.33
Average No. of tons of (all classes) freight per loaded car mile	22.99	22.34	.65	2.91
Freight train earnings per loaded car mile	15.17	15.15	.02	.13
Freight train earnings per train mile	3.06	2.99	.07	2.34
Freight train earnings per mile of road	6,749.41	7,750.78	1,001.37	12.92